



SLT INSIGHTS



June 2014

Data: The New Game Changer in Oil and Gas

Shrivan Kamdar, Hari Dutt, Jimmy Sebastian

OIL | MADE

Organize | Integrate | Leverage | Measure | Analyze | Decide | Envision

THE OIL & GAS INDUSTRY: PAST, PRESENT AND FUTURE

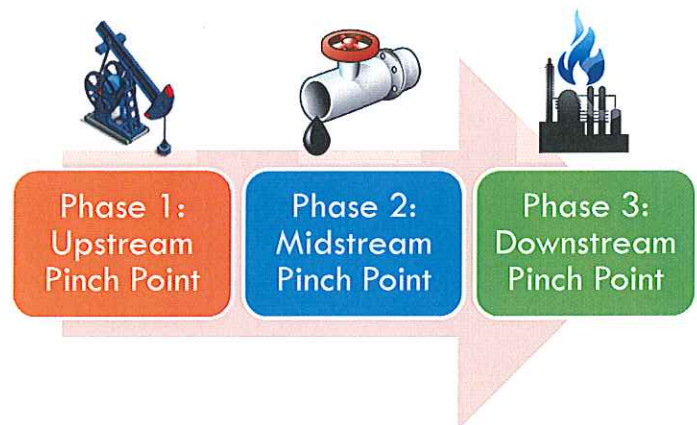
Data is important in the Oil and Gas industry – that is without a doubt. But identifying where it is the most strategically profitable and can function as a true game changer requires a quick review of recent history and basic economic concepts.

History: Less than a decade ago, every major reliable news outlet spoke of the concept of “Peak Oil” and how the human civilization had reached a maximum in its ability to extract hydrocarbon energy from the earth’s core. This led to a sudden rush of capital into the renewable technology space – only for the rush to die out like the latest style fad as companies, and governments – both large and small finally threw in the towel on most of their renewable projects. During this time, the Great American Fracking Boom began and peak oil became a concept of the past as many independent American companies were able to produce oil and gas using new fracking technology. The flow of energy into the world market led America on the path of becoming one of the largest (and eventually the largest) producers and there was no longer a constraint in the upstream oil and gas production market.

Economics: Supply and demand drive any industry and the area just before the pinch point is always the most profitable. Oil and gas is no different. The new constraint is in the midstream sector where there is constant news of pipelines being built south from Canada or west from Canada. The pipeline owners will be able to capitalize heavily once these are built as they will be able to control the flow of oil and gas. And finally, as downstream infrastructure continues to age (as no new U.S. refineries have been built in over four decades), there will come a time when the downstream will be the pinch point of the U.S. Oil and Gas industry and the owners of working well maintained refining capacity (new or old) will be able to capitalize at an amazing rate of return.

To summarize the above phenomenon, the US Oil and Gas industry will move through the following phases:

1. **Alleviate the pinch point in the upstream:** this phase has been accomplished with the advent of fracking.
2. **Alleviate the pinch point in the midstream:** this phase will be accomplished as enough pipelines and logistical capacity are built to move product around.
3. **Alleviate the pinch point in the downstream:** this phase will be accomplished in the future once new capital is spent to upgrade, maintain and/or build new refining capacity.



So what does any of the above have to do with DATA?

IMPORTANCE OF DATA BY SECTOR

At each point in this industry from the well to the end distribution station, there is a wealth of data that goes unanalyzed. The biggest value and competitive advantage this data can provide is **one step before the pinch point** in the system. Today, the pinch point is in phase 2 - midstream, which means the upstream industry is where the main source of value is in terms of analyzing data. That being said, the midstream is still important for data analysis in terms of relieving pinch points to become more profitable. And since profits beyond the pinch point are typically difficult to come by in a capital intensive business with a high COGS (cost of goods sold) – it is that much more imperative to analyze data simply to stay competitively relevant in sectors such as the downstream.

The remainder of this paper will focus on the importance of data in the upstream onshore sector. For midstream and downstream solutions, please visit www.sevenlakes.com.

UPSTREAM DATA

Data in the upstream sector starts at the well-site and flows vertically and horizontally through multiple pieces of software and through multiple levels of the organization to take a drop of oil from the bottom of the well and into a buyer's storage tank. The primary goal of the sector is to ensure that the oil gets from the well to the buyer in the shortest timeframe possible in a safe and environmentally sound manner.

Along the way, there are numerous issues related to data that an organization faces. These can be classified into three major categories:

1. Archaic ERP software
2. Field Data Gathering
3. Business Intelligence / Analytics

Archaic ERP software

The industry has multiple types of software for various different purposes. Many of these applications are archaic and were developed in the 1990s. Issues arising out of such decentralized software architecture are the following:

- The applications often store multiple versions of the same information.
- The applications are not integrated which means a change in data in one place will lead to two different records of the same data which are misaligned.
- Due to the age of the applications, the user interface is not intuitive and the data is typically not analyzed for strategic insights by the end user.

Field Data Gathering

The industry continues to have pumpers (operations personnel responsible for wells in the field) use pen, paper and grease sheets to collect and log data about the well and ancillary equipment such as flow rates, pressures, temperatures, tank levels, sale volumes, etc. The pumpers then go back to their desks with pieces of paper only to email or retype the information into an excel sheet to send over to the accountants and engineers. This increases the probability of errors, as well as lost and misaligned data.

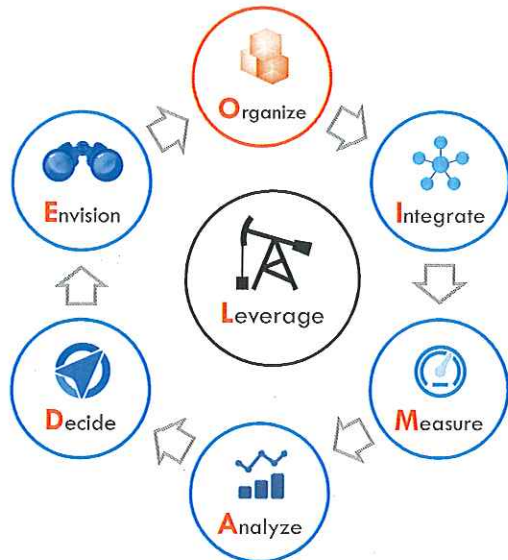
Business Intelligence & Analytics

Due to the aforementioned decentralization of data and the error prone methods of data collection, any organization trying to perform analytics to gain keen insights and business intelligence will come up with conflicting results. This leads to organizational churn to figure out what the true data is which delays any ability to make a quick decision.


Seven Lakes Technologies has an innovative framework for attacking these problems and managing data based on the nature and history


of the industry. A high level visual of the framework is shown:


OIL | MADE





Note: Orange circles are services offered by Seven Lakes Technologies. Blue circles are products offered by Seven Lakes Technologies. Black circles are the points at which the clients are able to benefit by leveraging the services and products offered by Seven Lakes.


 **O**rganize: Seven Lakes attacks the first problem of archaic software using the MDM (Master Data Management) solution by engaging the client and performing detailed analyses of client data to organize it into efficient database structures from which data can be easily pulled.

 **I**ntegrate: Seven Lakes Well Workflow and AFE (Authorization for Expenditure) Workflow solutions further resolve the problem of archaic software by integrating all of the data in the aforementioned MDM. This is a workflow specific process for workflows such as setting up a well for production and executing an AFE by figuring out the single source record for each piece of data and ensuring that every other instant of the data is updated based on its true source. This ensures that there is no duplication of records across the organization and to ensure corporate wide alignment.

 **L**everage: Organization and Integration setup the organization for success and enable the company to leverage insights from future data gathering, analysis, decision-making, and envisioning future forecasts to meet the main goal of extracting value.

 **M**easure: Problem 2 related to Field Data is solved by Seven Lakes' FDG (Field Data Gathering) application which is a mobile iPad based application with 3G/4G connectivity and GPS location services that allows pumpers to collect data directly into a network connected iPad while being able to take pictures and communicate with the control room supervisor via e-mail and Facetime. The control center personnel can also view geographic locations of pumpers and view the latest data. Business rules and logic help ensure that data is valid and errors/misalignment are minimized. This keeps field operators, supervisors, engineers and production accountants aligned.

 **A**nalyze: Now that data is organized, integrated and new data from the field is measured, Seven Lakes Technologies helps analyze data and enables business intelligence using customizable dashboards for items such as Lease Operating Statements, Property Profitability, AFE Dashboards, Vendor Spend, Production Portal, etc. These dashboards collect the latest data from the MDM or from any pre-existing rationalized data source to ensure consistent corporate wide reporting. Seven Lakes dashboards also have a user friendly and attractive interface that engages the end user in helping identify trends and insights to add significant value to the bottom line.

 **D**ecide: With all the tools in place, industry managers and leaders can now get true and accurate analysis, gain valuable insights into their operations and make smart decisions to make a positive and lasting impact to the bottom line. Seven Lakes technologies is also able to provide scenario building what-if tools within its applications to further assist management in scenario based decision making exercises.



Envision: Finally, with the ability to have integrated accurate data that is analyzed, Seven Lakes can further help push the envelope of adding value through data analysis using Predictive Analytics and Statistical Modeling. Our Predictive Analytics products help analyze client well performance data to predict when a well may go down. Studies have shown that approximately 70% of well failures are predictable. Further, 70% of these failures are fairly detectable using statistical modeling which means that approximately 49% of downtime can be avoided. Implementing a Predictive Analytics solution enables an organization to envision the future much more clearly with the following benefits:

1. Predicting well downtimes can lead to less unplanned capacity loss
2. Planned maintenance is less costlier than unplanned maintenance
3. Budget Planning and Revenue Forecasting would be much more accurate

Leveraging its in depth experience in Oil & Gas, IT and Analytics, Seven Lakes Technologies enables oil and gas producers to use data to change the game and add bottom line impact by minimizing cost, maximizing revenues and increase accounting efficiencies.

Shrivan Kamdar is an Engagement Manager in Seven Lakes' Westlake Village office. Hari Dutt is an Engagement Manager in Seven Lakes' Houston office. Jimmy Sebastian is Director of Client Engagement in Seven Lakes' Westlake Village office.

FOR MORE INFORMATION

Website: www.sevenlakes.com

E-mail: info@sevenlakes.com

Phone: +1-805-242-4288

Address: 2555 Townsgate Rd, Suite 105

Westlake Village, CA 91361

United States

Copyright © 2014

Seven Lakes Technologies. All rights reserved.



OIL | MADE

Organize | Integrate | Leverage | Measure | Analyze | Decide | Envision

