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Oil and gas analytics
Achieving rapid insights

Seeing through complexity

The oil and gas industry is known for its ability to successfully navigate within a complex and rapidly changing environment. Today, these growing complexities include the influx of big data — how to capture it, what to do with it, and how to extract the insights that matter. Petabytes of data are being collected from engineering, geological, production, and equipment sources, offering oil and gas companies unprecedented opportunities for better forecasting and a heightened understanding of core business issues.

Several changes are driving the influx of data in the oil and gas industry, including the growing use of sensors, larger numbers of unconventional wells, and an increase in remote and automated conventional sources. Actually making sense of this data to better understand trends and improve business outcomes requires these companies to reexamine the application of technologies, processes, and analytic acumen.

Technical staff, line-of-business leaders, and other decision makers are pressed upon to make rapid and informed decisions that support objectives around optimized production at the lowest cost. Using advanced analytics, these decision makers can gain game-changing insights that enable accurate forecasting and reduced costs resulting in new levels of profitability.

A dynamic view of the business

The emergence of new sources of data adds both to the complexity of the current landscape and the potential for big data and analytics to transform oil and gas companies. These sources include data from text-based reports, data contained in markup languages like WITSML and PRODML — along with unstructured data from such sources as maintenance records, file stores, and knowledge repositories.

New technologies and tools allow oil and gas companies to leverage these data types for rapid analysis and dynamic visualization, resulting in a more comprehensive view of the business issues. Advanced analytic tools transform static analysis and dense data sets into dynamic visuals that can be intuitively interrogated by even novice users to answer queries from decision makers. Using predictive analytics, users can run and operate their capital projects more effectively — for example, using forecasting algorithms to drive supply and demand management and predict equipment failure or down-hole problems during operations.
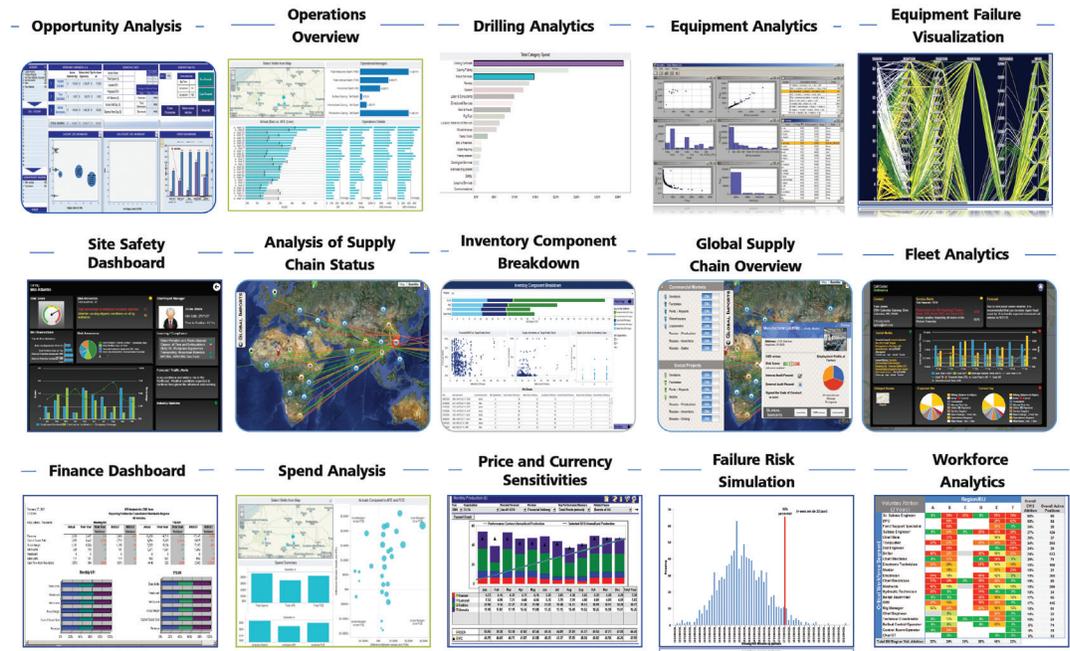
Deloitte Analytics solutions: Powering the oil and gas value chain

Deloitte Analytics oil and gas solutions can support near-real-time data flow architectures that work with traditional sources to speed analysis and support new and emerging data types, including high volume and velocity data. These solutions also empower end users to self-manage many of their priorities through intuitive interrogation and data discovery techniques without depending on inflexible back-end systems.

By applying innovative technologies and practices from other industries to the oil and gas industry, Deloitte Analytics oil and gas solutions can support line-of-business decision making and create value. Deloitte's specific oil and gas analytics capabilities include the following:

Capability	Demonstrated Results
Exploration and production optimization	• Increase the percentage of commercially driven hydrocarbons • Improve view of field operations and reduction of downtime related to drilling and production • Support predictive equipment that reduces down-hole failures
Capital projects	• Spend analytics • Predictive project analytics
Finance and commercial	• Manage pricing performance and reduce costs • Integrate short- and long-term production forecasts • Enhance marketing and processing agreements

Deloitte Analytics solutions leverage algorithms and leading practices developed across a variety of industries to drive value for oil and gas companies. The following is a sample of Deloitte Analytics solutions that can be used to help leading oil and gas companies drive value related to operations, drilling, equipment analytics, safety, supply chain, inventory, finance, risk and workforce.

Opportunity Analysis — Operations Overview — Drilling Analytics — Equipment Analytics — Equipment Failure Visualization

Site Safety Dashboard — Analysis of Supply Chain Status — Inventory Component Breakdown — Global Supply Chain Overview — Fleet Analytics

Finance Dashboard — Spend Analysis — Price and Currency Sensitivities — Failure Risk Simulation — Workforce Analytics
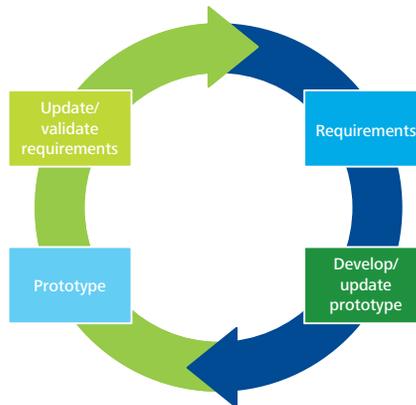
Deloitte Analytics' approach

Deloitte Analytics' approach features our demonstrated methodology that can be applied within oil and gas companies at any stage of their analytics maturity. The approach itself is iterative, driving results that support continuous improvement.

As the solution is used by the business and new insights and findings result, it inevitably leads to a new Update/Validate Requirements stage, which feeds the original Requirements.

During the Requirements stage, reaching alignment on the goals and reporting needs from the analytics is done.

Based on feedback from the prototype, a more rigorous analysis and design is completed resulting in the delivery of an improved Prototype.

At the Develop/Update Prototype stage, a quick solution is delivered based on an initial gathering and cleansing of the data.

We follow an approach that promotes prototyping, that gives an early view of the solution, and gives an opportunity to take early corrective action, resulting in:

- Flexibility — Requirements are re-visited with each prototype.
- Collaboration — Business is involved throughout the requirements and the prototype activities to ensure that business value is derived and delivered.

For more information

For more information on how Deloitte can help you achieve better business outcomes using analytics, contact one of our Oil & Gas practitioners:

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