

Delivering the digital oilfield: Access, timeliness among keys

The digital oilfield is all about enhancing asset value and optimizing operations, production, and reserves through application of information technology and practices. It is about improving safety, lowering costs, and increasing revenue by efficiently connecting the right people with the right information so they can make the best, most timely decisions. Some oil companies are realizing this vision with low-cost, rapidly deployable, Web-enabled technology.

The drive to augment the value of producing assets is challenging for the operating environment and capital intensive nature of offshore deepwater assets. Maximizing value while improving safety and profitability requires information from many sources and across the asset life. Information itself is not enough. The right people must have quick access to reliable information in context and in familiar forms to make well informed decisions.

Most oil companies have the technology and data management practices to acquire, store, and manage information. In fact, asset teams are flooded with information.

Because companies focus on technology and solutions for specific user groups, data is spread out across the enterprise, poorly organized and trapped in specialized application and database silos. Consequently, accessing, organizing, and presenting the information to decision-makers can take days or even weeks.

Solving this means first understanding the business and operational context of the company's assets. This gives direction to an organization's information management technology and practices.

Offshore benefits

Offshore operators realize benefits from digital oilfield initiatives and are harnessing full power from a wealth of exploration and production (E&P) information using Web-based asset management solutions.

Information management requirements in offshore operations typically fall into two categories – data for ongoing operations and data for unexpected events. Consequently, information management practices also focus on regulatory reporting and health, safety, and environmental issues.

Minimizing downtime is especially critical, and managing well integrity from discovery to abandonment adds complexity. A typical asset

Barry Irani
Oscan Teoh
Tom Woolley
The Information Store

cycles through five stages: 1) exploration, 2) development, 3) facilities, 4) production operations, and 5) well abandonment or divestiture. Each phase is "owned" by a different group within a company. Each group has different data and software requirements. As a result, systems for storing and managing data and documents frequently are incompatible.

The problem of transferring and sharing data and information from phase to phase grows more challenging because phases can occur concurrently as well as sequentially. For example, a drilling group might return to re-complete a well or drill a new well while the production team operates the platform. These groups must exchange information and collaborate effectively before and during a well handover.

The greatest threats to a platform's operational performance are hurricanes. Hurricanes, such as Rita and Katrina, disrupt production in two ways. First, facilities must be evacuated and operations shut down. Second, high winds and seas can damage facilities, leaving them out of commission for weeks. Since operators perform planned shutdowns wherever possible, asset teams must decide what work should be accomplished before the shutdown and coordinate work during the process. At-sea shutdowns in the face of a storm require massive information sharing.

Many oil companies share ownership, risk, and cost of offshore operations with other companies. Such joint ventures require extensive collaboration between partners and have a wide range of information-sharing needs.

Embarking on a digital oilfield initiative means finding a way to assemble and organize information into a single access point.

Data out of reach

Ironically, most oil companies have information technology and practices in place to collect, store, and manage the information, but the information is simply out of reach. That is because most oil companies have integrated E&P data into a single repository or master data

store. This is time-consuming, disruptive, and expensive. It typically requires years to achieve while technology, standards, information management, and user requirements change.

Rather than commit to long-term, costly data migration, oil companies are discovering the benefits of leveraging their existing data systems and technology by accessing E&P information where it is already stored and managed. By virtually integrating data and documents from across the enterprise, no matter where it resides, many companies achieve the level of data access they need to improve decision-making.

Decision-makers do not require all information all at once. In fact, presenting users with all the data they have access to overloads and impedes decision making. Instead, information must be organized into familiar forms or business objects, such as wells, fields, and reservoirs, and presented through workflows that make sense to the user.

Appropriate solutions leverage the ubiquity and technology investment of a company's intranet infrastructure to securely provide access for the right people so they can effectively collaborate, share information, and work from anywhere. No special applications are required, just a Web browser.

Because information management requirements both within and between companies are unique, the technology used to integrate, access, and present information must be adaptable. Fit-for-purpose asset management solutions that do this are available. These solutions capture the unique company or business unit business objects and workflow, adapting to the way users work, rather than forcing users to adapt to the technology.

Companies are benefiting from these solutions in two ways. First, these solutions are making the digital oilfield a reality. By providing access to information needed by asset management teams, these solutions help oil companies improve the value and performance of producing fields. Secondly, the cost of implementation is a fraction of the cost of traditional approaches because these solutions are rapidly deployable and leverage existing investments in data systems and Web technology. Also, these proven solutions can be deployed in weeks rather than years, helping companies realize their vision sooner rather than later. ●