

Managing E&P Data . . .

New Solutions For Asset Management



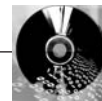
Connect Users With Right Data

Editor's Note: The digital age is providing unprecedented levels of data. In fact, data may well be the very lifeblood of today's oil and gas company, with steady streams of data related to all aspects of exploration, drilling and production flowing through every artery in the corporate network. Never before have oil and gas companies had more data on which to base their decisions, whether selecting a drilling target or allocating production and sales. But when it comes to achieving a competitive advantage, the issue is not how much data a company has at its disposal, but how it uses its data to extract value-adding operational knowledge and business intelligence.

For that reason, data management is core to virtually every discipline and user group—land to legal, geology to accounting—within the modern exploration and production organization. What are the key issues today in managing and analyzing exploration, drilling and production data? What kinds of strategic objectives do operators have for data management, and how are they achieving those goals? What technologies are better enabling oil and gas companies to efficiently extract business information from their data flows?

To find out, *The American Oil & Gas Reporter* invited Barry Irani, president and chief executive officer of The Information Store in Houston, to provide insight on how exploration and production companies can maximize the value of their existing information technology investments, and to assess emerging trends in data management. Irani has the perspective of having worked as a senior executive for both an independent E&P company and now a software technology company.

Questions posed to Irani are in bold-faced italics, followed by his responses.



Q: *Exploration and production companies have devoted significant amounts of capital and manpower to building internal information technology and data management infrastructures. How can they maximize the business value of their existing IT and data management systems?*

IRANI: It is a very simple concept, really—give users the information they want, when they want it, and in the manner they want it to do their work—yet it continues to be increasingly difficult to execute. Exploration, drilling and production companies spend billions of dollars generating, collecting, storing and managing data on an ongoing basis, and are not realizing the full value of all this enormous investment. Many oil and gas companies as well as service companies are reaching a certain level of maturity in terms of IT infrastructure and data management practices. These are companies who have invested heavily in converting from analog to digital media, installed the data management technology to support a growing flood of E&P data, and deployed a wide spectrum of specialized E&P applications. Consequently, information architecture is application-centric, resulting in silos of well defined but disparate data sets. This information landscape, so to speak, is optimal for the application requirements of some user groups; however, the narrow focus of the data makes it difficult to share information across the enterprise or even within the asset teams. To maximize the business value of IT investments and get the greatest return without creating significant additional overhead, companies are finding it more efficient and cost-effective to provide people with easy access to information directly from where it resides rather than move it to new locations. New asset management solutions based on this principle give oil and gas companies exactly this sort of access. They connect people to the information that makes sense, allowing them to focus on the activities that lead to increased business value. There is a huge increment of unrealized value lying dormant in every company waiting to be harvested, and this will happen with proper data management and information access. The entire industry will benefit from this increment of value as it occurs.

Q: *From the executive's perspective, what are the critical success factors for operating companies in achieving their data management goals?*

IRANI: First and foremost, oil and gas companies have to

treat the entire issue of data management and data access as a critical mainstream activity, and not simply a technology issue. Executives have to take ownership of it, get involved in it, devote the necessary resources to it and demand performance, just as they would in any other E&P activity. Our experience has shown that the most critical success factor is aligning IT objectives with business goals. There is generally a disconnect between the business users and IT, and this gap needs to be bridged. Every company we work with is organizationally unique. Often there is disparity in how a business unit and IT organization perceive and prioritize data management goals; each seeks to provide value within the enterprise, but is driven by different strategies. IT and business units tend to be organizationally isolated and compartmentalized. For example, asset teams may be dispersed geographically, while IT is centralized in corporate operations. Each business unit seeks to deliver the most value through customization of application and data management practices, while IT seeks to lower cost through standardization in these areas. Alignment can be achieved by adopting an information architecture based on a flexible framework, such as an advanced Web-based asset management solution, that allows IT to efficiently and cost-effectively deliver to the business users the custom data access and functionality they require.

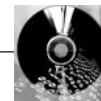


Barry Irani, chairman and chief executive officer of The Information Store (iStore), spent the majority of his career at Enserch Exploration Inc. A registered professional engineer in Texas, Irani is a Society of Petroleum Engineers distinguished lecturer and has been a lecturer at the University of Texas at Dallas and Southern Methodist University. Irani holds a B.S. in physics and chemistry from the University of Bombay, a B.S. and an M.S. in petroleum engineering from the University of Oklahoma, and is a graduate of the Harvard Business School Program for Management Development.

Q: *How are oil and gas companies connecting their people to the information they need to work with on a daily basis? What are the benefits for the various disciplines and user groups (i.e., geoscientists, engineers, management, accounting, etc.)?*

IRANI: The trend in data management over the past two decades has generally evolved from unstructured, poorly defined volumes of physical and digital data to well-defined and structured ex-

ploration, drilling and production data assets. The result is that information consumers have unprecedented amounts of data available to them. However, the reality is that the majority of geologists, geophysicists, engineers and managers still spend most of the day engaged in retrieving and manipulating data into a form they need to do their primary jobs. Realizing this, oil and gas companies are starting to search for ways to quickly connect people and information without having to move data around or invest in costly, unproven solutions. This is the direction of the future, and companies are now applying technological solutions to connect a myriad of proprietary data sources and commercial databases into a single access point for E&P



information. The most effective approach goes beyond application portals, however, by delivering information in context within an asset hierarchy, and not merely providing data access. Organizing and presenting information by familiar asset hierarchical groupings such as wells, fields, reservoirs and facilities lets end users easily and intuitively find the information they need. The net benefit of this approach to various user groups is that they are able to dedicate more time to finding, producing, forecasting and managing their oil and gas reserves.

Q: *Are there new technologies or techniques that oil and gas companies should consider leveraging as components in their data management frameworks?*

IRANI: Next-generation Web-based asset management solutions that can be easily adapted to meet each business unit's unique needs certainly should be considered key to any information architecture. That is because the access methodology these solutions use connect the company's dispersed and disparate data assets into one access point. This is achieved through virtual integration of the data management framework, rather than by creating a master data store. More importantly, however, the continuity of information is maintained at the user-interface presentation level, even as the underlying information landscape evolves either as a result of new technology or changes in a company's data management strategy or infrastructure. Timely and secure sharing of information with joint venture partners and service providers through an expanded asset management solutions framework is another component that oil and gas companies should keep in mind to optimize operations.

Q: *In what ways do operating companies typically need to augment or extend the capabilities of their core data management solutions and practices?*

IRANI: Most oil and gas companies have a similar data management story to tell. After developing their IT infrastructures and deploying numerous and costly exploration, drilling and production applications over the course of many years, companies eventually find themselves with a vast array of disparate data sources—both proprietary and commercial—with limited tools for efficiently viewing or browsing an ever-growing volume of E&P data. At this point, companies tend to do one of two things: they either throw even more money and technology at the problem, or begin looking for ways to maximize the value of the technology they already have in place. New data access approaches add that value to a company's data management investments, neither replacing existing tools nor requiring data to be moved to new locations. Instead, these approaches leverage a company's existing infrastructure, connecting the myriad data sources and presenting information in a form that makes sense to the end users.

Q: *How are operators strategically attacking the problems involved in managing data integrity?*

IRANI: I certainly acknowledge the importance of applying the right technology, process definition, and data ownership to the problems inherent in data integrity, but I believe the critical component to ensuring integrity is making information easily available to all stakeholders in a proper context. Many

oil and gas companies are reaching a point of maturity with data management technology and practices, yet still encounter data quality issues. Quality assurance and quality control is impeded by a lack of efficient access to disparate stores of data, and the right people—such as asset teams—are not involved at the right level, if at all. To ensure optimal data quality, a paradigm shift in data management philosophy is required that emphasizes access to quality data and the involvement of data value owners over the entire IT infrastructure.

Q: *What are some of the challenges encountered in managing subsurface data?*

IRANI: Ten years ago, exploration, drilling and production data management was quite different from what operators face today. Most oil and gas companies were primarily concerned with managing a vast complexity of E&P data dominated by physical media and incompatible proprietary digital storage systems. In other words, they were more concerned about identifying and tracking data assets than about making information easily available to consumers. Today, companies have solved the analog-to-digital data problem, established data definitions, and deployed hundreds of specialized E&P applications. This has resulted in disparate, widely dispersed data “silos.” In addition, many companies are now building digital reservoirs and gathering real-time data from dozens of new sources in the field. The result is a tidal wave of data, and in a sense, the typical geoscientist or engineer still faces the same data access issue of a decade ago. The main challenge for geoscientists, engineers and business managers remains achieving efficient, timely access to technical, financial, contractual and other information they need to do their work.

Q: *Do you see any technology advancements on the horizon that could significantly impact the ways in which data are managed in exploration, drilling and production workflows?*

IRANI: Advancements in computing technology and data storage are already delivering the promise that information technologists were envisioning in the 1990s. We are fast approaching an era in which data anytime, anywhere, on demand is a reality. I believe most of the technological advancements needed for sound E&P data management in and of itself have now been made, but making quality data easily available to the right people will continue to present a challenge in the foreseeable future. Many companies are or are planning to implement Web-based data portals that aim to consolidate data sources into one framework and reduce the number of applications needed to access vital information. Such technology is a partial solution at best. E&P knowledge workers in the 21st century require more than simple data access, and will demand technology that presents information in a useful context. The answer is to organize and present information around familiar business objects and build the asset hierarchy that can deliver the information in context to the end user, such as wells, fields, reservoirs and facilities or platforms. □