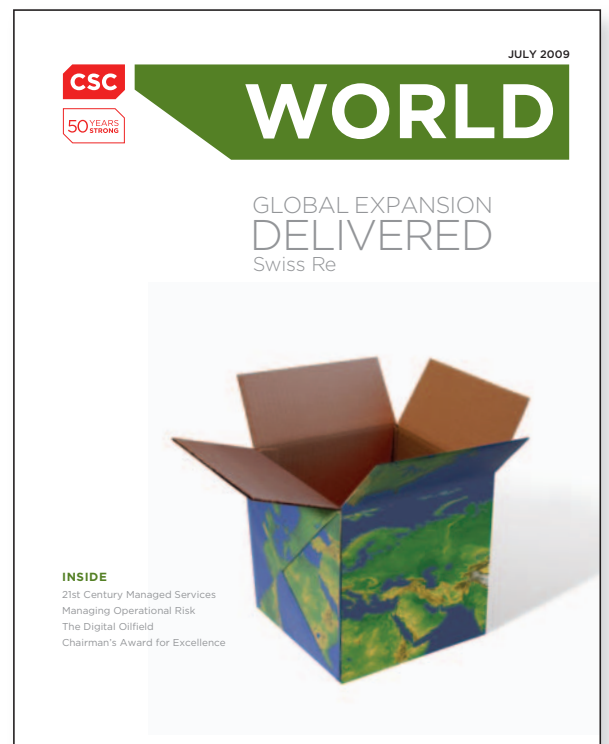


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# THE DIGITAL OILFIELD: Ripe for Enterprise Intelligence



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# THE DIGITAL OILFIELD

## RIPE FOR ENTERPRISE INTELLIGENCE

by Rus Records

The petroleum industry is facing steep external challenges and an explosion of digital information on the inside. Rising regulation, taxation, operational complexity and competition, combined with a growing boulder of company information, make it difficult for employees to manage and understand data. But the Digital Oilfield — a composite of people, processes and technologies — is discovering ways to assist exploration and production (E&P) companies across the globe.

This digital information is created by real-time data-gathering systems, new modeling and simulation tools and collaborating employees. Most E&P companies, big and small, struggle to manage this increasing volume of data, coming from all domains (finance, exploration, drilling, reservoir management and operations). Managing this information is critical, as it represents a huge investment in talent and money.

Yet, in many companies, this “real” data is kept in spreadsheets on an engineer’s laptop or on a “share drive,” where the data is “shared” only if another engineer knows how to find it. Software vendors have put forward specialized data viewers and data extraction tools while using proprietary data models, further increasing the complexity of the information management problem.

### More than just a well

The well is the central business object in E&P. At its simplest, a well is a hole drilled in the ground that takes oil, water and gas to the surface, where it connects to processing systems, a pipeline or a storage tank. But employees view the well differently depending on their function in the company:

- A driller thinks of a well in terms of the hole’s geometry, rock formations drilling fluids and equipment used to drill it.
- A reservoir engineer thinks in terms of the rock formations penetrated and the productivity potential of the reservoirs accessed.
- Production engineers think of a well as a mixed source of various produced liquids and gases that must be optimized.
- Financial analysts see a well as a collection of money “buckets” in which revenue is accumulated and costs are paid out.

These different points of view have engendered a variety of IT systems to store information of relevance to different groups of employees. Unfortunately, manpower and cost constraints have reduced the workforce size, giving the remaining workers wider and deeper responsibilities. They now need to access data in all of these systems, at once.

While a first key step is getting clean information quickly to organize into decision-making frameworks, there is now a widespread need for shared financial, operational and technical information and data across all the functions of drilling, exploration and reservoir management. Field engineers are now expected to consider the cost and revenue implications of their technical decisions. To do this, they need to access information from a wide range of back-end systems, including well histories, maintenance records, budgets, actual costs and detailed wellbore (drilling) and log information.

The future work environment must enable all of these capabilities, creating a collaborative environment with effective data visualization, search functionality, analytics, business intelligence and data management, based on industry standard metadata.

The essence of the Digital Oilfield is managing the entire E&P process, from exploring for petroleum to delivering it for refining — in a manner that integrates all the operators, service companies, logistics providers, software and technology providers, and various governmental regulatory agencies.

Yet, today’s best-of-breed E&P, ERP and proprietary technical and operational applications have created islands of technology and data that inhibit information sharing — which is critical for asset team collaboration. For a company to thrive in today’s petroleum industry, it must take on the significant opportunities and threats associated with the need to:

- Improve efficiency and capability to recover increasing volumes of oil and gas while reducing operating and capital costs
- Anticipate and manage the big “crew change” as the current workforce fast approaches retirement age
- Institutionalize knowledge and experience by capturing information at the source into defined systems of record
- Operate in an environmentally responsible manner with due regard for health and safety

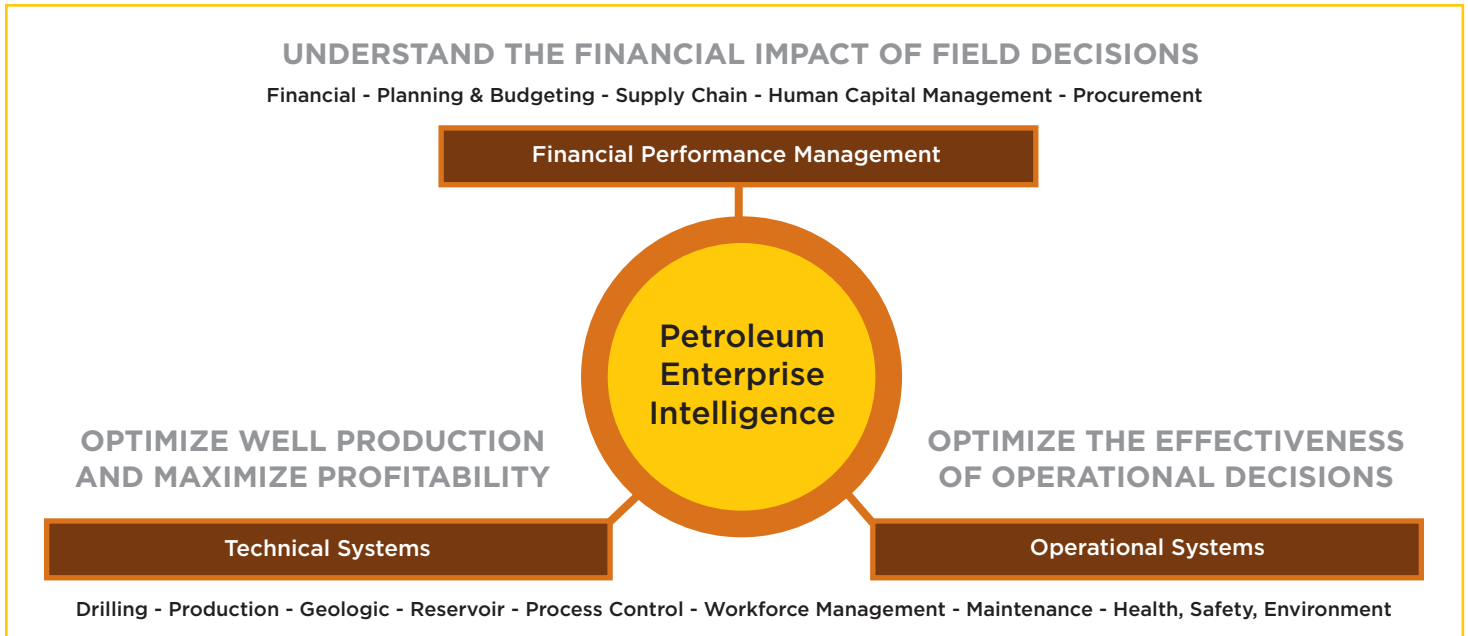


Figure 1

The petroleum industry’s core competency is the efficient development and management of operational assets. It is crucial that companies effectively manage the knowledge of their enterprise and the insights provided.

**Right information, right person, right time**

CSC has addressed these issues by creating Petroleum Enterprise Intelligence (PEI), jointly with Oracle, to take a holistic approach that provides key users across the Digital Oilfield with comprehensive and consistent views of information (see Figure 1). This solution is built on the capabilities of CSC’s Enterprise Intelligence offering, the Oracle Business Intelligence software suite (OBIEE and Oracle BI Applications), and the visualization and data management tools provided by The Information Store.

CSC has integrated these components into an information management product that, for the first time, integrates technical, operational and financial information in a highly intuitive way. With CSC Petroleum Enterprise Intelligence, petro technical employees can make critical oilfield decisions quickly and access the integrated information they need from a large number of structured and unstructured data sources, including technical information from E&P applications, operational information from real-time oilfield systems and financial information from ERP systems.

This approach features a portal-style view of a set of tabbed pages that correlate to the business objects of most interest to the petro technical managers and engineers. These tabs enable users to access specialized viewers linked to the appropriate information.

The system presents an intuitive user interface based on those business objects the user is most interested in: the well, the field, the reservoir, and the user’s team collaboration activities

and projects. Some of these Web viewer applications display various technical data in appropriate display formats, like maps, tables, strip charts, line and bar charts, and dashboard gauge.

These applications include pre-built data schema that can be loaded with federated data from the back-end systems, which can be virtually any E&P vendor application, data warehouses, or ERP applications like Oracle E-Business or SAP. In addition to the pre-mapped metadata, the BI Applications also include embedded best practice calculations and metrics that simplify the job of optimizing field financial performance.

By implementing CSC’s PEI, production groups can:

- Improve production/operations decision making with high-quality and timely information
- Expedite information retrieval by making access less complex, more accurate and customizable
- Enhance collaboration among technical, operational and financial users by providing joint access to the commonly used datasets
- Reduce costs and time to implement through the use of standard tools and pre-built data schemas
- Provide for the Web 2.x generation of petroleum engineers — visually intuitive and integrated across the enterprise. ●

**RUS RECORDS** is chief technology officer of CSC’s Chemical, Energy & Natural Resources Group.

Read the entire white paper and learn more about CSC’s PEI solution at [www.csc.com/PEI](http://www.csc.com/PEI).



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*The mission of CSC is to be a global leader in providing technology enabled business solutions and services.*

*With the broadest range of capabilities, CSC offers clients the solutions they need to manage complexity, focus on core businesses, collaborate with partners and clients, and improve operations.*

*CSC makes a special point of understanding its clients and provides experts with real-world experience to work with them. CSC is vendor-independent, delivering solutions that best meet each client's unique requirements.*

*For more than 50 years, clients in industries and governments worldwide have trusted CSC with their business process and information systems outsourcing, systems integration and consulting needs.*

*The company trades on the New York Stock Exchange under the symbol "CSC."*

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