

The Role of IT in the Energy Markets in the Next Millennium

By Ian Miller*

The subject of my speech today is the role of information technology in the next millennium. Not only is this a broad subject, but it also has a very wide time scale. I'm not going to try and predict where IT will be by the Year 3000, but I will focus on the more practical question of the next five to seven years.

In this period, we will be in a different position in the global economic cycle. Energy competition in Europe will be a fact. There might even be progress on utilities competition in the United States (although a speaker at last year's IAEE conference in San Francisco said that there are only three communist economies surviving in the world today – China, North Korea, and the U.S. utilities industry – so that's not a certainty). Three major producers – Iraq, Iran and even Libya – will probably be substantially changed in their political and economic positions. These changes, and many others in this dynamic market, will undoubtedly make the energy business of the early part of the next century significantly different.

Information technology offers a huge opportunity to benefit from these changes, or to become a loser. This may be controversial, but EDS does not believe that the energy industry is fully exploiting the capability of IT. While the industry leads the way in some other types of technology, there appears to be a very large opportunity being missed in IT. Other industries appear to be doing it better. There are a number of examples, but two that are very obvious are the airline industry and the automotive industry. Both of these have used IT to completely transform their business models, not just their operations.

Airlines moved to computer reservations and passenger check-in years ago. It might now take three minutes to check in instead of 45 seconds with the old manual system, but the benefits to the airline and the passenger are enormous. Route planning and capacity management, aircraft maintenance and utilization, and the tracking of key customers have all made large-scale differences in the way that airlines market their services and manage their business. Airlines have embraced the Internet and electronic commerce in ways that the energy sector has hardly started to consider. They have grown their markets and thrived in an increasingly competitive market, generating profits that would have been impossible under the old model. All these changes have resulted in IT becoming a differentiating competence, and those who failed to adapt are now out of business.

In the automotive industry, computers are everywhere. They have transformed the product (just think about GPS systems for navigation, and engine management systems to optimize performance and economy), and they have radically

changed the way in which vehicles are designed, manufactured and distributed. Lean manufacturing and supply chain integration have increased efficiency in ways that could not have been imagined even 10 years ago. The changes continue – more people are shopping online for cars, and every major manufacturer has a Web site that allows customers to test different combinations of color and features and price their options for a vehicle. While the sophistication of cars has grown beyond belief in the past 20 years, vehicles have remained cost-competitive and affordable, as IT has transformed the entire value chain.

We don't believe that energy companies have seen the same gains in performance through IT. Finding and producing/manufacturing technology development have made a big impact, but has IT really delivered on its promise in our sector? Although there are a few notable exceptions, the answer is probably negative. I'd like to consider several areas that we see as opportunity being missed.

The energy industry has the opportunity to drive further cost out of the E&P, refining and supply chain by identifying and applying best practices. We probably all smile wryly at the old saying "if we only knew what we know," because it is so true. Think of the knowledge

and experience that's locked up in the heads of individuals. Think of the pockets of best practice that exist within your own organization, then consider how much could be gained if the level of the best, in every key process, could be turned into the average across the organization. In this regard, many companies have actually moved backwards in the application of knowledge management. Across the industry, engineering and research and development departments have been downsized or even eliminated. The information and experience that used to reside in these departments has not yet been replaced by computer-based "knowledge networks." Until this is done, companies will sub-optimize by re-solving problems and missing the opportunity to identify, communicate and apply the best techniques for managing these key processes.

In a recent study that EDS performed for a chemical company, we looked at what happens when you are able to share knowledge from the best performing chemical plants in the company with the average chemical plant in the company. The study focused on the potential impact on the overall bottom line. The conclusion was that the company could add 2 percent onto throughput worldwide and could reduce maintenance costs by 15 percent. When you consider the multibillion-dollar scale involved in a global chemical company, these are significant amounts that represent big savings that go directly to the bottom line. If a company can get every site up to the standard of performance of the best, then the profitability of the entire enterprise will be transformed.

At the other end of the value chain we can look at "customer intimacy," which is the latest term for better understanding the enterprise's existing and targeted customer base. In other industries, data-mining techniques are being used to extract from core electronic commerce transaction systems a surprising amount of information on individual customers and



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their buying patterns. This is then being used for the development of customer loyalty schemes, for carefully focused marketing of additional services that fit individual preferences, and for identifying possible synergies with other retailers to get access to their customers. Think of the information that you get every time a regular customer buys gasoline. You know where they live, you know where they travel. You know what they buy in addition to gasoline. You know how much gasoline they buy, and from that you can deduce the size of their vehicle. Then think about what you do with all that information, to try and cross sell other products or services, perhaps in conjunction with a retail or service partner. The answer, almost certainly, is nothing. That is missed opportunity.

More opportunity exists through the commercial application of electronic commerce and online trading to improve efficiency and lower cost. One of our chemical customers uses an Internet-based system we developed called COSMOS, a system that integrates customer inquiries and the manufacturing/supply chain. In effect, these systems “outsource the customer.” Customers access inventory records and manufacturing schedules, model different order quantities and qualities, and see immediately the possible prices and delivery dates. Customers place their orders electronically and are invoiced electronically. Not only are the back office savings huge, but customer loyalty is also increased very significantly and the cost of selling is driven down. Just as most of us prefer to use ATM machines to get cash, so most customers enjoy the ability to manage their own orders without human interaction. Electronic commerce is the way of the future. If you’re not getting that message now you’re not listening to your markets.

In utilities, the opportunity of IT might be even greater. Certainly, the threat to the current incumbents in this market is far greater if they don’t adapt to the new digital economy. Utility markets everywhere are facing competition where monopolies previously ruled. Experience in markets that have opened to competition suggests that the utility companies that have operated in a monopoly market find it very difficult to adjust to the new culture of “the customer” instead of “the consumer.” This is becoming a retail business, and utility companies are going to have to become retailers if they are to survive. New entrants are going to come into these markets, and the biggest threat could be from retailers who will capitalize on their skills and experience and their existing customer bases to compete against the traditional players. They will bring with them the latest IT systems to track and analyze their customers, to offer differentiated packages of service based on their individual buying patterns and lifestyles, and to maximize the total value of each customer.

IT systems are going to drive the development of the utilities market. The marketing strategies that we have seen used so far in markets opening to competition have been relatively simple. Those companies who make the first move in using information to produce knowledge about their customers and potential customers and deploy IT to gain and keep market share are going to leave the traditional approaches far behind.

I can summarize by saying that the future will be different. Information technology is leading the way into a new millennium and a new business era. Ignore these facts at your peril. IT is going to transform this industry, and the only question is whether it will be the companies represented here who benefit or suffer from these changes. If the industry doesn’t adapt fast

enough, it will become more and more limited to the commodity end of the market and more vulnerable to low margins and high capital intensity — vulnerable to the economic cycle. We could see the emergence of the “virtual energy company,” where all the capital-intensive operations are outsourced and all of the value of the company is in the collection and application of knowledge.

Enjoy the future, but don’t ignore the opportunity and threat that the digital economy represents. Adapt or die is the rule of business as well as the rule of the jungle.

Italy: an Oil & Gas Producing Country? *(continued from page 15)*

(initiated in 1998) constitute a European record, as it lays at 850 meters below sea level and uses a whole set of innovative technologies.

- In the Po Valley, where exploration has been liberalized this year in hopes of attracting new investors, the excellent production of the deep oil fields (60K bbl/d in Trecate) has recently revealed an interesting area of research.

As a result of this activity, a healthy oil industry has grown in Italy, with technological cross-fertilization between local and foreign companies. Many specialized companies operating here are selling their products and services worldwide.

Just like anywhere else, this industry had to go through the ups and downs of world oil prices and the growing awareness of CO₂ emissions. But other obstacles and difficulties were specific to Italy, principally the fact that most oil and gas fields are situated in environmentally sensitive areas, which is often the reason for long and frustrating negotiations with central and local authorities.

To counteract these barriers, the Industry Association is functioning as an efficient interface with public authorities, first of all by facilitating the authorization processes and easing the companies through the red tape, but also by opening new levels of dialogue and understanding between the oil industry and the environmental constituency.

To this end, we have recently signed an important voluntary agreement with the Ministry of Environment which will foster the commitment of oil companies to developing and applying innovative and environmentally-sound technologies.

We have identified room for technological improvement and further opportunities could lead to technological excellence of this sector in Italy. Given the very particular environmental conditions of the country, we are, therefore, working in the direction of making the *art* of oil drilling totally compatible with the country of the *arts*.

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