

eBusiness and geophysics

While many claims and promises of the dot-com boom have come and gone, the boom did initiate a tremendous amount of network and software innovation, and did push the Internet into mainstream business. One example of Internet innovation is the Java programming language, which was designed specifically with networking in mind and is capable of dealing with security and parallel distributed computing issues while maintaining portability. Java has seen the most rapid explosion in number of developers in the history of computer science: three million developers in five years.

Internet technology hit "critical mass" faster than any new technology in recent history by reaching 50 million users in just five years. The energy industry spent \$3 billion on Internet technologies in 1999 alone, and many E&P companies have already used the Internet for collaborative business partnerships and projects. Seismic data vendors have established infrastructures to access, share, and distribute well and seismic data over the Internet, and service companies are offering interactive services and project QC over the Internet.

In the late 1990s, the world got excited about the business opportunities that a new "disruptive technology," the Internet, could create. Disruptive technologies are the Holy Grail of venture capitalists because they have the potential to displace established, mature companies with good management, by startup companies. The startups introduce products that initially underperform the established products in mainstream markets, but have other new features that eventually lead to the displacement of the old, mainstream technology. The new products are usually cheaper, simpler, smaller, more convenient to use, and are not developed by incremental improvements over existing products, but by a new approach that initially has worse performance than the leading brands. Eventually, the performance of the new products matches and exceeds the performance of the mainstream products, and the extra features become a compelling argument for replacing the status quo. Large companies that do not incorporate the new features in their product are displaced by the startup companies. New shareholder value is created in the process, hence the interest of the venture capitalists.

About 30 examples of disruptive technologies in various fields are given by Clayton Christensen, in his book *The Innovator's Dilemma*; they include:

- Minicomputers replacing mainframe computers.
- Arthroscopic surgery replacing open surgery.
- 8-inch Winchester drives replacing 14-inch drives.
- 5.25-inch drives replacing 8-inch drives.
- Mobile telephony replacing wireline telephony.
- Online stock brokerage replacing full-service stock brokerage.
- Digital photography replacing photographic film.
- Digital printing replacing offset printing.

In geophysics, a list of disruptive technologies would include:

- Digital recording.
- Migration imaging.

- Interpretation workstations.
- Interactive workstation processing.
- And now, Internet processing, interpretation, integration, and collaboration.

The Internet is an infrastructure technology that is enabling the disruption of many industries. But the Internet itself is a commodity, a medium for delivering services, disseminating information, and doing business. Just having an Internet strategy or presence is no longer a differentiating characteristic for a business enterprise. The recent burst of the dot-com bubble underscores this fact. The real market showed that selling pet food or shampoo over the Internet is not a high-tech enterprise with large barriers of entry.

There is a lot of talk about the "new economy" versus the "old economy." I don't believe there is a new or an old economy. There is last year's economy, this year's economy, and next year's economy—the "real economy." In a white paper, Bob Peebler, vice president of eBusiness Strategy and Ventures at Halliburton, discussed the market influence of the new economy. He noted: "Cisco has a market cap of \$400 billion on sales of \$19 billion and earnings of \$3 billion. Exxon has a cap of \$306 billion on revenues of \$241 billion and last year's earnings of \$13 billion. Exxon, whose earnings are four times greater than Cisco's, has only 75% of Cisco's market capitalization!"

In the real economy, that means that Cisco is a factor four times overvalued! Since the burst of the Internet bubble, Cisco's market cap fell to \$84 billion. The real economy always wins.

Nonetheless, the Internet is a new and disruptive technology that ushers in a paradigm shift for many industries, and the upstream E&P industry is one of them. So while in the long run Internet technology will not differentiate an enterprise from its competitors, it will become a key component of daily operations, and that component will have to be well implemented to leverage the power and competitive advantage inherent in the Internet. As in any paradigm shift, the disruptive technology will differentiate between those companies that will adapt and survive, and those that will not.

The articles in this eBusiness special section of *TLE* all describe real economy, real world applications of the Internet to the upstream E&P industry. Bevc and Popovici describe a Java-based system that allows remote processing, visualization, quality control and collaboration over the Internet. Karbarz describes how the Internet can be used as a computing grid to harness computing power over the network—analogue to a power grid, but delivering megaflops rather than kilowatts over a network. Hanley describes how IT infrastructures and collaboration are transforming the oil and gas business, and describes two examples of how operators are using collaborative IT solutions to create bottom-line value. Fay describes how the Internet can be used to improve business processes during the lifetime of an exploration asset. **TJE**

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