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Get the Picture

Data visualization software is helping companies make decisions by making sense of mounds of information.

News Story by Connie Winkler

JANUARY 09, 2006 (COMPUTERWORLD) - With gasoline prices up and equipment to drill new wells backlogged, oil producers want to squeeze every drop out of existing wells. But which sites have more oil to give up? To revisit old drilling data for possible clues, Halliburton Co.'s energy services group turned to a new-breed data visualization tool, and so far the analysis has led to more contracts for the Houston firm.

By creating a "picture" of the data -- a process that entails rendering multiple variables into a graphical presentation -- Halliburton analysts have found ways to see deep into the earth, spotting patterns, trends and anomalies in the data.



Judy Tiffin, U.S. business and marketing analyst at Halliburton
Image Credit: Pam Francis

"We wanted sites that had very high production at first but then decreased rapidly," says Judy Tiffin, U.S. business and marketing analyst at Halliburton, noting that such reservoirs might have gotten clogged somehow and could be kick-started into production by one of Halliburton's services. "We can go in and stimulate or treat the well differently and maybe get the production up higher," she says.

However, wading through data to find those sleeper sites is a tricky process that involves comparing many variables. "It's usually not just one thing -- there's so much [to consider]," Tiffin says. "We don't know what's going on underneath the ground."

To juggle the millions of pieces of this multidimensional or multivariant data, Halliburton's production optimization group tried Spotfire Inc.'s DecisionSite software. Until then, the five-member production optimization team had plodded through internal and public well data and seismic readings one Microsoft Excel data plot at a time.

Halliburton, Dunn & Bradstreet Corp., Cullen/Frost Bankers Inc. and Microsoft Corp. are among the companies embracing such analysis software, which devours data either from existing spreadsheets and database products or from data warehouses and business intelligence systems, and transforms it into visual representations. The tools -- some of which cost as little as \$999 -- enable users to slice and dice data on the fly multiple times and to spit out the findings in multicolor bar and pie charts, scatterplots and diagrams.

The tools are part of a bigger market made up of products that provide new ways of seeing data. Other offerings include geographic information systems (GIS) and real-time data-stream-processing visualization tools such as those from StreamBase Systems Inc. and RiverGlass Inc.

"Visualization is a means of making sense of these vast amounts of data," says Dan Vesset, an analyst at IDC in Framingham, Mass. "The visualization makes [data] easier, simpler and faster to understand." IDC estimates that sales of data visualization tools were \$250 million in 2005. The market research firm also projects 10% annual growth for the \$15 billion BI and analytics market, which includes dashboards and applications, along with data visualization tools.

However, Gartner Inc. analyst Bill Hostmann cautions that data visualization is far from a requirement for BI systems, although BI systems that offer visualization capabilities are popular in industries such as pharmaceutical development and petroleum exploration.

Vendors that are hard at work developing data visualization products include **Advizor Solutions Inc.**, Antarctica Systems Inc., Panopticon Software AB, Spotfire and Tableau Software Inc. BI stalwart Cognos Inc. just bundled its Visualizer product into Cognos 8, while Business Objects SA acquired visualization toolmaker Infommersion Inc. in November. These companies and others are also partnering with GIS vendors, notably Environmental Systems Research Institute Inc. (ESRI) and MapInfo Corp.

Cullen/Frost, a \$10 billion financial holding company in San Antonio, is using the Cognos 8 visualization tools for tracking plans vs. performance. "Before visualization tools, we reviewed paper reports of pertinent data, discussed the reports and then did additional manual analysis through requests to other departments," says Louis Barton, director of data warehouse and BI.

The Cognos tools are now used by managers and employees in treasury management, market research and corporate data stewardship departments at Cullen/Frost. "We're able to get a fast summary of critical success factors to help determine the gap between business plans and actual performance, with the seamless ability to drill into detail of areas of concern or areas of success," says Barton. The visualization software can easily be linked with other analytical and reporting tools, he says.

At Dunn & Bradstreet in Short Hills, N.J., the corporate global analytics group brought in **Advizor Solutions** tool about five months ago for a new executive who had used it elsewhere. The five Advizor users say that it readily connects to Microsoft Excel or Access files, along with other corporate databases, but they wish it could use the data in their SAS BI systems.

But it's all about the graphics for director of data management Jinlai Fu, who's responsible for all of D&B's statistical modeling, performed for clients such as internal marketing or account managers and for C-level executives. "We needed a good graphical tool to help us in our presentations," says Fu. "In the past, we did graphs either in Microsoft Excel [or] PowerPoint itself." Advizor has cut showtime production by at least 20%, he estimates.

Taylor Hawes, Microsoft's controller for global platforms and operations, is a Tableau power user. He says he appreciates the Tableau tool's smooth linkage to the underlying data. In October, he distributed the tool to 15 analysts, including people in the human resources and product groups. "Usually when you're dealing with data graphically, you have to disconnect the underlying numbers. Tableau is cool -- you can cut and paste a chart, actually pasting the numbers that you highlighted in cutting it out of the chart," says Hawes. "Technically, Tableau's ability to render a graphical presentation on the fly is exciting; we don't have anything today at Microsoft that can do that."

Who's Using Them

Some vendors estimate that only 15% to 30% of the workers who have access to BI tools within their companies actually use them. Data visualization tools counter that, says Michael Smith, Cognos' BI marketing manager.

"Presenting complicated data in an easy-to-consume fashion makes it a lot easier for users to understand the data and to make decisions that improve their performance," he says. Business users want the equivalent of the USA Today newspaper's multicolor weather map of weather trends and patterns.

Rows and columns simply aren't as compelling or informative. "Typically, when you're looking at text, you're looking at one issue, one point, one piece of data," says Judith Hurwitz, principal of Hurwitz & Associates. The Waltham, Mass.-based consultancy studied the effect of presenting data graphically for dashboard provider Bowstreet Inc., which was recently acquired by IBM .

"When you're looking at a dashboard or GIS system or any of these tools, you're looking at an automatic aggregation of information ... say, from five different databases and public data sources," Hurwitz explains. "In the past, you manually coded and aggregated that information." In a recent Hurwitz survey of 113 IT executives, 95% of the respondents said dashboards were a way to provide increased consistency, reliability and accuracy to improve decision-making.

The new analysis tools can open up an organization, argues Spotfire CEO Christopher Ahlberg. "People are saying, 'Wow, I'm not going to be in a world where I'm just served a number, I'm going to have freedom to start exploring things,'" he says. Many organizations have access to the same data and run the same SAP or Oracle information systems as their competitors. "To differentiate themselves, they need to look at information in clever ways ... and create an information advantage," says Ahlberg.

IDC's Vesset has another explanation for the spread of these tools, especially among executives facing Sarbanes-Oxley Act mandates: "The CFO doesn't want to be on the hook by himself."

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