When commercial airline pilots are told they need to brush up on their emergency flight skills, they spend time in a flight simulator. They know they need to viscerally understand how the plane will behave in extreme conditions; otherwise, they may loose a multimillion-dollar plane - and even their life and others'.

CEOs piloting large corporations need simulators as well. The market landscape whizzes by and business conditions can be rough, yet CEOs still pilot the corporation looking at reports and at times a dashboard. Relying on such indicators means that, although they're good at flying by the numbers when conditions are clear, when the business climate gets stormy, they often don't have a good feel for how to keep the corporation from going into a dive.

In short, they need a dynamic, visual environment to help them simulate extreme conditions - to help them understand the complex interplay of the market landscape, competitive pressures and the limits of their corporation. The good news is that visualization technology is finally getting sophisticated enough to fill this need.

**Visualization: It's Been a Long Time Coming**

Sophisticated visualization has been a long time maturing. In the past 40 years, the technology has gone through three stages:

- **No-D.** No-D is the world of the 3270 "dumb" terminal, which was completely text based. That, of course, didn't stop some smart developers from lining up letters and symbols as a way to create some rough charts and graphs.
- **2-D.** 2-D is the world most of us live in today, populated with Excel pie charts and bar graphs. Although users can...
sometimes make the representations three dimensional, these pictures relatively static. They function as declarations of a final result or decision, rather than as a morphing learning environment.

- **3-D.** 3-D is the world that is arriving. Powered by large monitors, fast graphics cards and powerful CPUs, this is a highly dynamic "let's try this, hmm, now that's interesting" environment that leading edge companies are starting to adopt as a learning and communications tool.

### The Shift from Sizzle to Steak

Dynamic visualization has sometimes been denigrated as "eye candy," an accusation that has an element of truth to it. More than one marketing vice president has reigned longer than he should by using snazzy, twirling graphics to disguise weak performance.

However, to denigrate all visualization as "sizzle" is a mistake. What is happening now is that sophisticated visualization technology is becoming mainstream - since it can run on standard PCs, companies are integrating it into their daily work process. Rather than a slick, after the fact pastiche, used to dress up numbers, visualization is being used to derive the numbers - in certain cases. Visualization is perfect for iterating through what-if scenarios or discerning subtle patterns in the business that frequently go unnoticed.

### Dynamic Visualization: It's for Complex Problems

"In certain cases" is the operative phrase. The vast majority of corporate decisions do not demand a lot of what-if scenarios. The normal course of business is relatively predictable - if inventory levels run low, do this; if sales dwindle, do that. In day-to-day operations, humans know the routine and do not need sophisticated visualization tools to run the business. Where dynamic visualization's power lies is in its ability to 1) show interrelationships between a large number of variables and 2) communicate those complex relationships to a disparate set of people.

A spreadsheet's columns and rows do just fine for highlighting simple cause-and-effect relationships among several variables. If per-unit costs go down as manufacturing volume increases, that relationship is easy to see in Excel's number-centric interface. However, if unit costs fluctuate due to 1) manufacturing volume increases, 2) shipping costs based on supplier distance, 3) labor costs based on how manufacturing volumes are apportioned across different factories, etc., those relationships become much murkier when displayed in numbers. Visualization, by using shapes, colors, position and other visual cues, makes it much easier to spot the complex interactions, especially when users change the values of a variable: "Hmm, these two go down, one more than the other, when this goes up."

Communicating such a dynamic set of relationships is difficult to do using words or numbers. As the saying goes, since "a picture is worth a thousand words," a visualization workbench that enables users to "play" with a picture can more easily communicate a complex view than a report heavy in numbers and text ever could.

### Take a Look

There are a raft of visualization solutions now available. Advanced Visual Systems, anacubis, Compudigm, Dimension 5, Fractal Edge, The Hive Group, MAYA Viz, Mindjet, Panopticon Software, Spotfire, SS&C Technologies, Tableau Software, Visual Sciences, and VoxVue are just some of the companies that now offer dynamic visualization. Now that spreadsheets and business intelligence suites have lightened the burden of running the daily business, dynamic visualization to help you identify outliers and tackle more complex
problems might be just the thing you’re looking for.

Editor’s note: DM Review is sponsoring a data visualization best practices competition. See the sidebar for more information:

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**Data Visualization Competition**
http://www.dmreview.com/dataviz

*DM Review* is sponsoring a data visualization best practices competition. We are looking for best practices for presenting the information gathered using data warehouses and business intelligence. This competition is open to anyone who would like to participate, using any tools you wish. You can find the guidelines at [http://www.dmreview.com/dataviz](http://www.dmreview.com/dataviz).

Stephen Few, the author of the *DM Review* column entitled “Data Visualization” will judge the submissions and feature the winners in an upcoming column. The winner will receive a $250 Amex gift card. Submission deadline is March 15, 2005.

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For more information on related topics visit the following related portals...
*Data Visualization.*

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