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## Lead Stories

### 2 brothers 4 dimensions

by KEN SCHACHTER

For Bob and Richard Balfour, the future can't arrive soon enough.

The forward-looking identical twins have devised an Internet browser that lets users vault beyond the flat screen and move in four dimensions - length, height, width and time.

More than just an exercise in coding prowess, the software displays complex data in a graphical form that allows users to quickly grasp patterns or problems.

For instance, the company was hired by Frederic R. Harris Inc. to provide 4D visual software for the Logan International Airport modernization program in Boston. Using the software, engineers could see step-by-step how the various pieces of the project would interact. Would a temporary access road be in place in time for delivery of materials to a terminal under construction? The software could fast forward or rewind to show it.

The latest versions of their fourDscape software allow aerial photos to be laid over a data set to create visual displays of construction sites, traffic patterns or other complex systems. The first deployment of fourDscape was at the New York State Department of Transportation Visualization Section in Albany and Balfour promotional material bills it as the "first 'killer app' of the 21st century."

But, for now, precious few servers are set up to feed four-dimensional data to the browser, meaning - for the masses, at least - it's more concept car than production model.

To understand how the twins came to develop software that pushes the technological envelope requires, appropriately enough, a step back in time.

Born in Bethpage, the brothers attended Bethpage High School, not far from their current offices at the Long Island Software and Technology Network Incubator at Briarcliffe College.

After high school, both studied math and computer science at Hofstra University.

Their paths diverged a bit when Bob, the firm's chief technical officer, continued on an academic track, getting a master's and doctorate, while Rich stopped at a bachelor's.

But, like so many other Long Island entrepreneurs, both worked for Grumman Corp.

"We were both working in the simulation and training field - flight simulators and simulator-training labs," said Bob Balfour, 48. Their experience also included working on on-board software for the F-14 fighter jet, he added.

The work with flight simulators led, almost inexorably, to their own work with three-dimensional software. Add the time dimension, in which users can rewind and fast-forward the browser like a VCR, and you've got fourDscape.

The brothers started their company in 1980, but the current iteration took shape only in 1999 when they merged Balfour Computer Systems with Infinity Technologies, led by Bing Zeng, now a principal and co-founder of Balfour Technologies.

Though the software is indisputably cutting edge, selling angel investors and venture capitalists on the merits of the business model is another matter.

In February 2000, the company disclosed that it expected to close on a \$2 million private placement within 60 days. As it turned out, 60 days was too long. "March 2000 is when the stock market died," Bob Balfour recalled. "All the venture capital money went away."

Still, the business has plodded along, supported in part by consulting jobs, allowing the Balfours to continue developing their 4D browser.

"We're not depending on a capital infusion," said Bob Balfour. "We do whatever it takes to keep the lights on and keep the research moving forward."

One coup was to insert core fourDscape technology in the "visualization engine" for the transportation analysis simulation system developed by IBM Business Consulting Services.

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The software is designed to help state, regional and local governments comply with the federal Clean Air Act and other transportation mandates.

What other uses does Bob Balfour see for fourDscape?

One prime target is homeland security, he said.

For instance, authorities could track tagged vehicles or goods by combining geographical data with global-positioning system feeds or identify people's travel patterns.

"There are so many opportunities to visualize data sets in homeland security," he said. "Not only is the money there, but so is the need for data visualization."

Web surfers can download a copy of the fourDscape browser from the Balfour Technologies Web site ([www.bal4.com](http://www.bal4.com)). The special browser launches automatically from Microsoft's Internet Explorer when a 4D address is entered. But few servers are equipped to provide the data required. To get a taste of the flight-simulator-style experience the browser supplies, users can try a demonstration on the Balfour site, [4dpp://server.BAL4.com/fourD/hangglide/portal?pkey=584bfb79a](http://4dpp://server.BAL4.com/fourD/hangglide/portal?pkey=584bfb79a).

Why will users migrate toward the 4D world?

For Bob Balfour, fourDscape returns computer users to something akin to the four-dimensional world to which they're accustomed.

"It's natural," he said. "You can analyze things in the same natural environment we live in."