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## 4R assisting big firms with supply tracking

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WAYNE — A company co-founded by a Wharton professor has gotten its supply-chain management software out the door and into the computers of some pretty impressive customers.

4R Systems Inc., which recently unveiled its model for managing the supply chains of products with short lifecycles at a conference in Chicago, said its software is now being used by:

✓ American Pacific Enterprises LLC, a San Francisco-based supplier of fashion home furnishings;

✓ Linens 'n Things Inc. the giant Clifton N.J.-based houseware and home accessory retailer;

✓ Kenneth Cole Productions Inc., a New York-based maker of footwear, handbags and accessories;

✓ Lexington, Mass.-based shoe maker The Stride Rite Corp.;

✓ Finnish wireless phone maker Nokia Corp., and;

✓ Ahold, an international supermarket operator based in the Netherlands.

"We're getting a lot of traction as a company," said Jeff Singer, the chief executive officer of 4R, whose name refers to what the company wants to help its customers achieve: putting the right product at the right price in the right place at the right time.

4R grew out of research done by Marshall Fisher and Ananth Raman, who are professors at, respectively, the University of Pennsylvania's Wharton School, and the Harvard Business School.

The two did a three-year study on the retailing of items with short lifecycles, which include everything from fashions and home furnishings to trendy consumer electronics goods.

That led them to develop mathematical formulas to help manufacturers, distributors and retailers of those items better match supply with demand.

Obviously, matching supply with demand is critical for all manufacturers, distributors and retailers, but it's especially so for those that deal with items that can be popular one day and yesterday's news the next. The trick for them is to get as many of their items as possible in front of consumers while consumers are still willing to pay the maximum amount for the items. If they don't supply enough of the items, they miss profitable sales opportunities, and if they supply

too many, they wind up with excess inventory that they have to sell at a discount.

Maximizing sales opportunities on short lifecycle products can be particularly profitable because it usually doesn't require adding factories, warehouses, transportation, stores or employees. It simply allows manufacturers, distributors and retailers of the items to make more money on their current capital investment.

"It's worth millions of dollars to these people and its millions of dollars that drops to the bottom line," Singer said.

Despite the amount of money 4R's software can help its customers make, there are few, if any, other developers of similar products.

"There's plenty of forecasting software on the market," said Gary Gleckner, the director of information systems at American Pacific Enterprises. "The difference that 4R brings to the table is they specifically pride themselves on working with short lifecycle products."

American Pacific Enterprises became aware of 4R through some papers that Wharton's Fisher had written on supply chain management. It contacted Fisher about the papers, found he had formed 4R and hired 4R to do consulting for it, thus becoming 4R's first customer.

Singer said American Pacific Enterprises had an unusual problem. It manufactures high-end fashion bedding, but unlike many of its competitors, does so in Asia. As a result, although it has a lower cost structure than its competitors, it also has a longer lead time to fill orders — four months as opposed to two months. That means its forecasts have to be more accurate than its competitors' forecasts because it can't adjust its supply to meet demand as rapidly as competitors can.

4R has helped American Pacific Enterprises reduce its forecasting and replenishment errors from more than 100 percent to less than 20 percent, Singer said.

"They're actually using that four-month lead time to their competitive advantage now," he said.

At their heart, the formulas that power 4R's



CURT HUDSON

**Doing the 'right' things: Jeff Singer, CEO of 4R Systems.**

software seek to minimize two types of risk simultaneously — the risk associated with buying too much, which is obsolescence; and the risk associated with not buying enough, which is lost sales. In mathematical terms, 4R is trying to optimize the variables that represent the two types of risk, which is why it calls what it does "uncertainty-anchored optimization."

The technique can be used to forecast demand and manage supply at levels as small as a single product at a single store and as large as an entire company.

It marks a shift from forecasting methods "that don't include scientific methods to model consumer demand," said Greg Girard, a vice president of retail industry service for AMR Research Inc., an information-technology advisory firm based in Boston.

4R, which has raised \$5.5 million in two rounds of venture financing since its inception in 1999, is concentrating on getting all its software up and running with all its customers, so they can give it great references, Singer said.

It then hopes to use those great references to land new customers. Singer sees that happening quickly enough to bring 4R to a break-even point next year, although that's as specific as he'll be about the company's finances.

Beyond that, Singer thinks 4R will be able to make use of its ties to Wharton and Harvard to keep its software on the cutting edge.

"We're attacking problems right now that I guarantee most people think are unsolvable," he said.

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