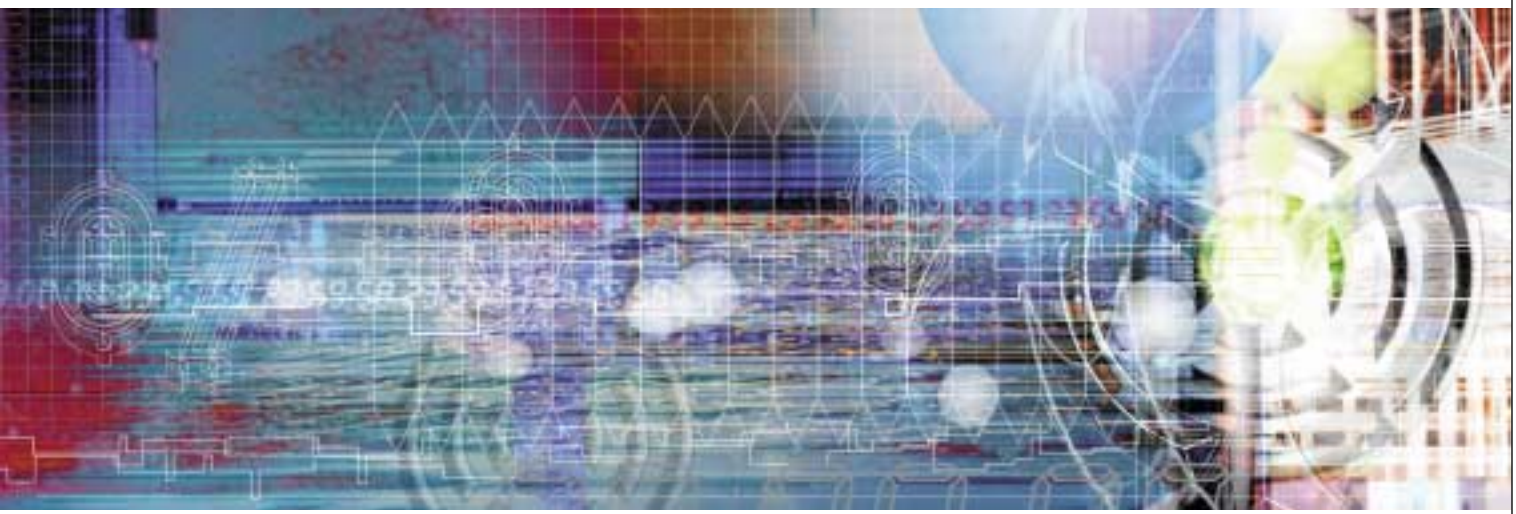
BY JOHN R. JOHNSON, SENIOR EDITOR



a whole new dimension

One day workers were fumbling with tape measures; the next they were watching wide eyed as incoming cartons whizzed through high-tech scanners. How cubing equipment changed life at Ditan Distribution.

MATT SCANLAN'S OPERATION HAS AN IMAGE TO UPHOLD, AND, FRANKLY, there's no room for rulers and yardsticks in the picture. Scanlan is chief operating officer at Ditan Distribution, a third-party logistics provider that specializes in distributing time-sensitive products like videogames to retail stores. It's not some penny-ante regional outfit. With six distribution centers in North America, Sayreville, N.J.-based Ditan ships just over one-third of the nation's videogames to mega-retailers like Wal-Mart and Target each year.

In the past, when he conducted site tours for prospective customers, Scanlan would show off the facility's sophisticated in-line weighing systems and talk a lot about its failsafe quality control procedures. What he didn't show them was the back room where associates were busily gathering product dimensions with a tape measure and manually entering the data into a computer. "Our customers expect us to have sophisticated processes in place," says Scanlan. "We provide a world-class service and they expect us to have integrity in our processes. You can't bring in a *Fortune* 500 company and tell them we're measuring their boxes with a ruler."

Today that's no longer a problem. Scanlan now can proudly show off Ditan's state-of-the-art dimensioning technology to visitors. Early this year, the company installed cubing equipment at three of its DCs. The same equipment will be up and running at the other three centers sometime next spring.

What is cubing equipment? Also known as dimensioning equipment, cubing machines use sophisticated sensors to collect dimension data electronically.

Available both as stand-alone models or as devices installed in a conveyor system, cubing systems instantly calculate the length, width, height and weight of items ranging from books and eyebrow pencils to the largest pallets and crates. The data then can be transferred to a real-time host system or a warehouse management system (WMS) that manages the flow of goods within the distribution center.

Rapid receipt

Cubing systems do much more than solve their customers' image problems, however. They save a lot of money as well. By eliminating both the miscalculations that inevitably result from manual measurements and keystroke errors, they cut the risk of costly compliance charge-backs and even lost business. The equipment also saves users money on shipping costs and cardboard, since cartons are packed more efficiently.

Then there are the time savings. Almost to a one, users report that collecting dimensions electronically speeds up processing time on the receiving end. That's been a big plus for Ditan Distribution, which often has only three or four hours to break down an inbound shipment of, say, Grand Theft Auto into as many as 10,000 separate outbound orders. Scanlan estimates that installation of cubing equipment (in this case, Cubiscan units from Quantronix) has sped up Ditan's receiving process by 40 percent.

a real basket case

Brett Beebe would love to be in Matt Scanlan's shoes right now—waxing lyrical about the benefits of his newly acquired cubing equipment. But Beebe, who is the engineering director at basket-maker Longaberger Co., will have to wait. Before he can pick up the phone to order a cubing system, he must first sort out some of the challenges that come with measuring the handcrafted gift baskets and pottery Longaberger ships.

Longaberger migrated to a highly automated distribution center in 2001, ending a 13-year run in a no-tech/low-tech paper picking environment. Though pick-to-light technology and high-speed conveyors have worked wonders, Beebe figures that cubing equipment would take the operation to yet another level by increasing picking efficiency and slashing shipping costs. It would also likely minimize the number of cartons used per order. A cubing system would automatically select the right size box for the picker who initiates the order. Right now, the picker who chooses the carton at the beginning of the process has no way of knowing what awaits downstream.

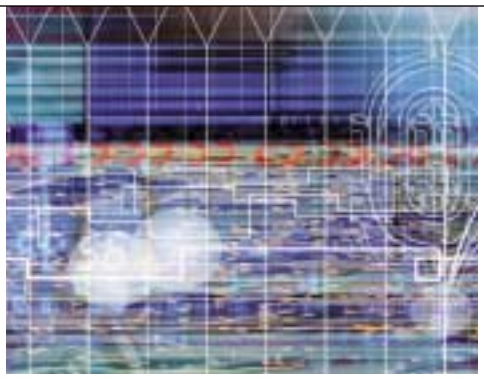
Beebe's goal is to use cubing technology to capture dimension information and transfer it to the company's WMS. That system would use the information to build an equation to calculate the average cube space of each item, how much space it consumes, and how many times certain products would be shipped with other products.

So what's holding him back? The unique nature of the products he's shipping. Obtaining cubing information for stackable products like picnic baskets and berry baskets is tricky business. "It can be very difficult to find a solution when you nest products during shipping," says Bob Babel, vice president of engineering at Forte, a consulting/systems integration firm specializing in DC layout design and equipment integration. "When you ship a waste basket, not only can you stack two or three inside each other, but you can also fit something else inside that space as well, and use only one box. It's a difficult issue to solve, and I'm not sure if there is a perfect solution."

For a company like Longaberger, Babel says, the challenge will be to decide just how many algorithms are enough. Because a big order containing a large number of items (especially stackable items) could result in an almost infinite number of packaging configurations, the company will need to limit the number of calculations performed. "You need to decide if it makes sense to run through three iterations and maybe get to 60 percent [efficiency], or run it through 10 times to get an even higher [level of efficiency]," he says. "You need to consider what kind of processing time it takes to do that versus what you gain."

But Beebe hasn't given up hope. Despite the obstacles, he remains optimistic that he'll soon be able to capitalize on cubing technology to boost customer service. If other online retailers' experiences are any indication, he's probably right. Cubing equipment's success in reducing the number of half-full cartons—or multiple cartons shipped to a single address—has been well documented.

Cubing equipment also holds great potential for damage control. Online retailers are notorious for shipping, say, expensive wine glasses in the same box as a heavy casserole dish, leaving the unhappy recipient holding a box of shards. "That's one place where you can gain some real advantages," says Babel. "The software would actually control that process and prohibit that from happening. When you pay order pickers based on how much they push through the system, [they have little incentive to use] the care you would want somebody to exhibit in that situation. So from a quality standpoint, you can probably see an improvement in the type of cartons packed out, how the product is mixed."



The availability of complete and accurate cube and weight information for each incoming product also takes storage decisions out of the realm of trial and error. Using the dimension information, a WMS can automatically decide where to put away items in the facility, explains Randy Neilson, director of sales and marketing for Quantronix, which markets several cubing products under the Cubiscan brand. "In order to determine optimal storage locations and to move items into storage and then out of the distribution center, the WMS uses cube information to make more efficient use of the real estate in the facility."

Weighty matters

Though it might not be the first thing you think of, cubing equipment can also bring quality control benefits. Since it installed the cubing equipment, Ditan, for example, has already found that fewer quality checks are needed on the outbound side. Today, exact product weights are captured when items first enter the DC. As the products move past an inline weigh station, they are kicked off only when a weight variation is detected. "Our quality control process is better because our weights going in are much more accurate—thus [the percentage of] boxes getting diverted on our QC line because of weight imbalances has dropped significantly," Scanlan reports. "It saves us an incredible amount of time in our QC process because far fewer boxes are diverted."

Not only that, but the cubing system functions as a sort of double-check mechanism as well. The inline quality scale isn't infallible; a carton of 500 videogames that's short by one unit, for example, would most likely pass through the scale undetected. But the new cubing equipment has enabled Ditan to track picking errors that go unnoticed in the normal quality process. Because the systems are integrated, associates can now cross check the expected weight versus the actual weight, and track down the carton affected by the mispick.

"That's a benefit that we didn't anticipate when we started out with this," says Scanlan. "If our inline scale fails to catch a picking error for some reason, we can identify the carton number in our system, go directly to the pallet and find the box and locate the picking error. We sure weren't able to do that before." □