



# The DATA CAPTURE Report

Since 1977, the premier management & marketing newsletter of automatic data capture: Bar Coding, RF and related technologies.

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December 13, 1996

## DID YOU KNOW?

### TOP THREE PRIORITIES FOR BAR CODE EQUIPMENT VENDORS


According to **Frost & Sullivan**, there are three key, competitive, benchmarking, measurements practiced by leading and emerging companies in the bar code equipment market. They are stated below in order of importance:

- Maintaining close customer relations.
- Collaborations in the form of alliances/mergers/acquisitions.
- Leading in the technology race.

Based on a 1996 survey, close to 73% of industry participants maintain very close relations with their customers. This has been reflected in the form of educational programs, in-house/on-site application training, monthly customer newsletters, direct customer support, end-user surveys for new product development and other similar services.

In the same survey, it was determined 63% of companies ranked industry partnerships and alliances as the second most important strategic measurement in their overall operations. These alliances often enable companies to consolidate distribution and R&D efforts, while focusing on their own core competencies.

Nearly 40% of suppliers stated that being first to introduce a new technology to the market greatly influences their position in the market from year to year. Reducing R&D time was also of importance.

For more information: **Frost & Sullivan, Inc.**, Mountain View, CA, PH (415) 961-9000, FX (415) 961-5042. 

## Eltron And Zebra Terminate Merger Talks

Almost as shocking as the news of **Eltron's** and **Zebra's** intention to merge, was the November 20 announcement that talks for the proposed consolidation have ceased. Eltron Chairman/CEO Donald Skinner and Zebra Chairman/CEO Edward Kaplan jointly announced they have terminated merger talks. The merger would have made the combined company one of the largest in the AIDC industry.

The insurmountable barrier seemed to be representation on the board of directors. In initial negotiations, Eltron would have three directors on the board while Zebra would have four representatives. This ratio was agreed to because Zebra had approximately twice the sales, three times the market share and three times the net income. Because of the imbalance in representation, Skinner [who was to be the president/CEO of the new combined company] could have been outvoted on any major issue, thus rendering him ineffective as the company leader.

Another major factor in the breakdown of negotiations was over Kaplan's involvement in the management of the new company. In a teleconference on November 21, Kaplan told listeners that Eltron's perception of how the new management structure should operate would have limited his input as chairman to quarterly meetings.

Kaplan, who wanted to be an "active chairman," involved in at least part of the day-to-day operations of the company, found this unacceptable. "In the initial discussions, I was to focus on strategic issues, board responsibilities and special projects where I could provide a relatively high level of expertise," stated Kaplan.

Continuing, Kaplan told us, "This team approach would ensure a smooth transition and allow both Don and me to contribute to the future success of the company. Essentially, negotiations moved in the direction of Ed Kaplan becoming a quarterly chairman and, quite frankly, that was simply not acceptable."

Although Skinner did not feel he could manage effectively under Kaplan's terms, he told us he understood that Kaplan had invested 26 years of his life in Zebra's development and that it would be difficult for him [Kaplan] to give up total control of the company's operation. "The discussions stopped making progress," confided Kaplan, "and actually started to move in the reverse direction as we got into the details of the transaction. Obviously, we are sorry things worked out this way."

**"Essentially, negotiations moved in the direction of Ed Kaplan becoming a quarterly chairman and, quite frankly, that was simply not acceptable."**

**Ed Kaplan, Chairman/CEO Zebra Technologies**

Speaking for Eltron, Skinner expressed extreme disappointment over the failure to reach an agreement with Zebra's management. However, he also felt it was better to discover their differences now than to find out after the merger went through. "It would have been much more detrimental to our shareholders if we had gone through with the merger and then found we [Eltron and Zebra management] could not all work together," Skinner asserted. "And; I still believe both our company and Zebra have bright futures."

Both Skinner and Kaplan wished each other well. Although neither would speculate on future acquisitions or a reopening of talks between Zebra and Eltron, the men said their companies are in good shape financially and ready if the right opportunity comes along.

*Comment: The end of merger talks between Zebra Technologies and Eltron International comes as a shock to almost everybody we've talked to. This merger seemed like a perfect match of technologies and distribution channels. And when we spoke with Eltron and Zebra representatives at SCAN-TECH, there was no hint that things were not going well.*

*As rumors of the breakdown in negotiations spread throughout the industry, our phone lines were buzzing with people calling to see if the stories were true. Overall, most people we spoke with voiced their disappointment. This is probably because most of us were wondering what might have been if the merger had come to fruition.*

*However, there are still many exciting events going on and we at SCAN/DCR are convinced that other major acquisitions and mergers will continue to keep our industry buzzing with excitement. We wish both companies well and look forward to following up on the inevitable, ensuing competition between these two printer manufacturers.*

For more information: **Eltron International**, Simi Valley, CA, PH (805) 579-1800, FX (805) 579-1808; **Zebra Technologies**, Vernon Hills, IL, PH (847) 634-6700, FX (847) 913-8766. 

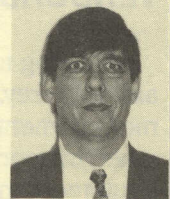
## **SCAN** The DATA CAPTURE Report

Since 1977, the premier management & marketing newsletter of automatic data capture, including:

- Bar coding, 1-D & 2-D symbologies
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- Magnetic stripe
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- Vision systems, video scanners
- EDI
- Smart cards & optical cards
- Memory tags
- Biometrics
- Application software
- Peripherals or supplies for the above

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**Editor:** Rick Morgan  
PH (814) 838-0025, Ext. 222  
FX (814) 835-1764  
rickm@corrypub.com



**Copy Editor:** Robert E. Lee II

**Contributing Editor:** George Goldberg  
PH (516) 487-6375  
FX (516) 487-6393  
ScanGG@aol.com

**Publisher:** Terry Peterson  
PH (814) 838-0025, Ext. 204  
FX (814) 835-4331

**Circulation:** Melinda Reed  
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# SCAN-TECH 96: A Personal Journal (continued)

by George Goldberg

[In the last issue (SCAN/DCR 11/22/96), we related our experiences during the first two days at **SCAN-TECH 96** in Chicago. Included were reports about: **AIM International**; **AIDC Pioneers**; the **AIM/US** statistics program; **Battelle Institute/Eastman Chemical's** invisible bar code; and corporate news from **Symbol Technologies**, **Norand** and **RVSI** (and its subsidiaries **Computer Identics** and **ID Matrix**). In this issue, we will complete our rounds on the final two days of the exposition.]

Thursday, November 7, 1996

1000 hours: Our meeting with Don Skinner, president of **Eltron**, was almost entirely devoted to the recently-announced merger of his company with **Zebra** (SCAN/DCR 11/8/96). Skinner is scheduled to become the president/CEO of the merged companies; Ed Kaplan, Zebra's chairman/CEO will be the chairman of the new company. Skinner described his plans to commute weekly from Eltron's home base in Simi Valley, CA to Zebra's Vernon Hills, IL facilities. It was apparent — from Skinner as well as from other Zebra executives — that it was important this corporate marriage was to be viewed as a merger of "equals" with neither company dominating the new corporate entity.

Surprisingly, there were many important post-merger questions still left open; e.g., What would be the name of the new company? How were the executive responsibilities to be divvied up — particularly between two strong personalities such as Kaplan and Skinner? Would any of the manufacturing operations be merged? How would the marketing organizations coordinate their efforts? Will the non-printing products — such as Eltron's bar code verifiers recently added when **RJS** was acquired — fit in the new mix?

*Comment: We came away from our meetings with Skinner and other Zebra executives convinced that a Zebra/Eltron marriage held great promise by bringing together two well-established, complementary product lines and two strong, successful management teams. As reported on page one, however, that wasn't enough to cement the deal.*

*Last week, the companies decided to call off the merger. As is apparently the case in this instance, it is often the intangibles — some call it "chemistry" — that determine the outcome of such joint ventures.*

1100 hours: The excitement generated by **PSC**

personnel was palpable. The company was still coming to grips with its acquisition, just six months ago, of **Spectra-Physics**, a move that more than doubled PSC's revenues overnight. (In 1995, PSC's sales were \$87 million; Spectra's were \$115 million.)

Stu Itkin, PSC's executive VP of marketing, was certainly not daunted by the Spectra challenge. "We now have an expanded line of products to offer our resellers," Itkin said, "and we will be able to benefit from Spectra's well-established channels of distribution, particularly in Europe." Itkin has become a bi-coastal commuter during this transition period, sharing his time between Spectra's Eugene, OR location and PSC in Webster, NY.

The PSC management team is facing a number of challenges in addition to the integration of Spectra-Physics. These include the closing of the Florida operation of **Lazerdata** and moving it to PSC headquarters in Webster. Lazerdata — a manufacturer of industrial, fixed-position laser scanners — was acquired by PSC in 1994 at which time PSC stated that Lazerdata would not be moved and would continue to operate as a separate entity.

One significant problem the company hopes is resolved involves the very important Minuet DI 1000 miniature scan engine that PSC introduced with much fanfare last year. The DI series of products is just emerging from its development glitches which set back production shipments about six months. Itkin characterized these difficulties as "newborn" problems that are not unusual with new products which incorporate technological breakthroughs. (This new technology is the focus of patent infringement legal actions brought by Symbol Technologies against PSC.) Itkin predicts that PSC will be shipping more than 20,000 of the DI 1000 units in the first three months of 1997 with volumes increasing in subsequent quarters.

Itkin was particularly enthused about the new self-checkout lanes that PSC recently introduced. To prevent fraud, the system uses technology developed by **Optimal Robotics**. Each item is weighed immediately after scanning and the weight is compared to the weight of the product listed in the database. Although recent reports suggest that some supermarket chains have not been enthusiastic in their acceptance of these self-checkout lanes, PSC believes their unit will answer many of the perceived problems in the field. (Unfortunately, the demo unit in the booth was less-than-perfect in its ability to detect attempted fraud.)

1200 hours: Even small acquisitions can produce major headaches. We spent a few minutes with Jack Kindsvater, president of Zebra's **VTI** division, the Utah-based software developer acquired by

Zebra in 1995 (SCAN Aug 95). (Kindsvater has joined the ranks of long-range commuters, shuttling between Salt Lake City and his home in the Chicago area.)

The attraction offered by VTI was access to the consumer and small business users of bar codes through VTI's retail distribution channels. These included office supply superstores (e.g., **Staples**) and large PC retailers (e.g., **CompUSA**).

The problem was that VTI was not all it was cracked up to be. When acquired, VTI's annual sales were approximately \$2 million. The price paid by Zebra was a steep 110,000 shares of Zebra's stock (\$5.5 million at the then price of \$50 per share) plus potential future payments of \$4 million in cash based on performance. Zebra is now suing David Carter — the original owner of VTI who was recently ousted from the company — for misrepresentation, specifically including concealed problems with the software products themselves.

Kindsvater maintains that VTI will correct its product problems and will provide Zebra with the market opportunities that originally prompted the acquisition.

**1300 hours:** In its booth, **Welch Allyn** demonstrated that it is not afflicted with the NIH (not-invented-here) syndrome. W-A will scan any linear or two-dimensional bar code using the most suitable technology available: laser, CCD or wand. The company is application-oriented and featured its ability to package multiple data capture technologies in a single unit. For example, W-A developed a special unit for **IBM** field service reps. It includes a Symbol Technologies laser scan engine to capture the product ID and a mag stripe reader to record information from the rep's ID card.

**1330 hours:** It is easy to confuse two companies that manufacture RFID transponders. **Mikron** (pronounced "Meekron") is the Germany-based division of **Phillips** that makes read/write RFID transponder chips for low cost applications which require data security. Mikron had been an exhibitor at previous SCAN-TECH shows.

**Micron Communications** (Boise, Idaho) is a first-time exhibitor at an AIDC show. The company's product line features Remote Intelligent Communication (RIC) units. These are small, high frequency (2.45 GHz), wireless communication

devices with applications that include mobile asset control systems used to track truck fleets or office equipment. Micron was also promoting a low-cost transponder, directly competitive with the **Texas Instruments** TIRIS units, used on automatic-toll highways.

**1400 hours:** Spent the rest of the day touring the aisles, speaking with vendors and visitors. There seemed to be more and more resellers and fewer end-users among the show-only attendees. Some exhibitors were unhappy about this trend. They want a closer look at the present and future needs of their ultimate customers. Other vendors — particularly those who sell primarily through VARs and distributors — welcomed the opportunity to interact with their resellers as a group and to meet potential new dealers from around the world. Achieving a better balance between reseller and end-user attendees is a problem Reed Exhibitions will have to address more vigorously for future shows.

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*Friday, November 8, 1996*

**0800 hours:** Had a ball moderating the panel discussion at the AIM Breakfast of Innovators. The panel consisted of the members of the AIM/US Board of Directors, all CEOs of their companies: Scott Cardais (**Hand Held Products**), Dave Collins (**Data Capture Institute**), Mike Hone (PSC), Jack O'Leary (**IIMAK**), John Paxton (**Monarch Marking**), Larry Roberts (AIM/US), and Don Skinner (Eltron). We were particularly gratified by the lively comments that came from the overflow audience of 150 representatives from the industry's leading AIDC suppliers.

**1000 hours:** At our meeting with Mike Hone (PSC), we covered a broad range of subjects, since he is deeply involved in the AIDC industry at many levels: Hone is retiring after two years as chairman of AIM/US; he was just elected chairman of AIM International; and PSC is in the throes of reorganization following the acquisition of Spectra-Physics.

At AIM/US, much remains to be accomplished. During Hone's two-year stint as chairman, AIM was totally reorganized. This followed the sale of the SCAN-TECH show, which had been AIM's main activity and source of revenue for a dozen years. AIM/US is now seeking to strengthen its organization and to become more responsive to the needs of its members. Its primary focus is on the development of standards, new market initiatives,

and statistical reports and analyses.

At AIM International (AIMI), Hone is taking over after that organization's successful three-year struggle to clarify its mission and to establish its role as the coordinator of worldwide activities for the AIDC trade associations. A major objective was achieved when AIMI carved out its position as the coordinator of international AIDC standards. One challenge facing the new chairman and his board will be to establish AIMI as a free-standing, financially viable organization. "AIM/US and AIM/Japan are carrying almost all of AIMI's expenses," Hone told SCAN/DCR, "and we will be seeking new opportunities for others to share this burden."

As for the present and future outlook for the company that pays his salary, Chairman/CEO Hone could not be more optimistic. "The acquisition of Spectra-Physics," Hone stated, "opens up many new opportunities for PSC. Although we will not be able to continue to use the valuable Spectra-Physics name [as agreed in the purchase contract], Spectra's marketing channels in North America and Europe and the excellent reputation of their retail scanning systems will be valuable assets."

Hone also confirmed — as a result of the Spectra acquisition — that PSC was able to replace its own 1991 licensing agreement with Symbol Technologies with the more favorable terms and lower royalty fees of Spectra's older licensing agreement with Symbol.

**1100 hours:** Our final meeting at SCAN-TECH 96 was with the affable John Lewinski, vice president of **Reed Exhibitions** in charge of the SCAN-TECH show. Although no hard attendance figures for the 1996 show were available, Lewinski pronounced it a success based on his preliminary numbers.

Lewinski had chosen Thursday's SCAN-TECH 96 *Show Daily* to publicly announce **Info Expo**, Reed's new venture into the AIDC field. "This announcement," Lewinski emphatically told SCAN/DCR, "is not just a trial balloon to determine how much support we will have among the vendors. We have made a firm commitment to hold the Info Expo in April 1998 in New York City's Javits Center. We have been quietly canvassing a number of important vendors who have told us that they support this move. Our target will be to attract end-users, particularly in the healthcare, insurance, retail, and banking and finance markets which are concentrated in the New York area. SCAN-TECH is

a 'horizontal' show for all AIDC users; we see Info Expo as more of a 'vertical' show, regionally directed at potential AIDC users in particular industries. If this is successful, we will schedule other Info Expo shows in other parts of the country directed at other specific market segments."

We told Lewinski that we had informally surveyed more than a dozen management and marketing executives and had found a great deal of resistance to a third AIDC national convention.

These are some of the questions and comments that we heard:

- *With ID Expo scheduled to be held just a month after Info Expo — just 90 miles away in Philadelphia — would two such events, just 30 days apart, stretch the resources of many vendors?*

**Lewinski** replied: "The goal of Info Expo is to attract a large number of end-users. We do not

believe we will be competing with ID Expo which appeals mostly to resellers."

- *Of the four targeted markets for Info Expo, only the financial market has any large concentration of end-users in New York. Healthcare and retail are dispersed nationally, and insurance companies are headquartered in other cities such as Hartford and San Francisco.*

**Lewinski:** "There are many company headquarters located in the New York metropolitan area. In addition to the industries we've targeted, we expect to attract a significant number of corporate managers from all sectors."

- *The largest, most prestigious trade show for the non-grocery retailers is the National Retail Federation Exposition held every January in New York for more than 80 years. Wouldn't Info Expo be a duplication for many of the AIDC companies which have major exhibits at NRF?*

**Lewinski:** "We have not yet addressed that problem."

- *Why is Reed dropping the SCAN-TECH name for this new show?*

**Lewinski:** "We want to broaden the attraction beyond just scanning. Eventually we may use the Info Expo name for all our AIDC shows."

Lewinski summed up his company's position by

stating that it is strongly committed to the growing AIDC industry. For example, Reed had recently reached agreement with AIM International for joint sponsorship of SCAN-TECH Asia in Singapore (in April 1997) and SCAN China in Beijing. "Info Expo is our response to the desires of our customers [exhibitors] to move the show around the country," Lewinski explained, "in order to penetrate untapped markets and to reach out to a larger number of end-users. We may not have all of the answers at this early date, but I promise that there will be an Info Expo in New York in April 1998."

Lewinski is the first Reed executive to manage SCAN-TECH for more than one year. We find him to be refreshingly accessible, friendly and candid. But, he is also one tough hombre.

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SCAN-TECH 96 is history! We hope that all of the exhibitors are closely following up on their leads and carefully evaluating the results of this expensive marketing effort. ~~\*\*\*\*\*~~

## Are U.S. Stores Ready For Self-Checkout?

Although self-checkout systems in supermarkets may be the wave of the future, to date, acceptance of this technology has been slow in the United States. At the recent **SCAN-TECH** show in Chicago, IL [Nov. 5 - 8], **PSC, Inc.** unveiled the U-Scan Express™, its "new," stationary, self-checkout system. Actually, the system is based on technology pioneered by **Optimal Robotics** (Montreal, Canada) but PSC is now exclusively manufacturing and marketing this self-checkout system.

Self-checkout systems have been around for a number of years and have met with reasonable success in Europe. In the 11/8/96 edition of *SCAN/DCR*, we reported on **Symbol Technologies'** hand-held, portable, self-scanning system which is apparently gaining acceptance in the U.S. and is widely used in **Safeway** grocery stores throughout the United Kingdom. In an interview with Symbol President/COO, Tomo Razmilovic, he told us he anticipates a huge market for Symbol's self-checkout system. And according to Stuart Itkin, VP of worldwide marketing for PSC, the U-Scan system is considered to be an integral part of PSC's future sales.

But the truth is, although both Symbol and PSC are betting on the success of their new products, widespread acceptance of self-checkout systems at this point is not a reality. A recent article in *Supermarket News* pointed out that the U.S.

response to self-checkout systems has been, at best, lukewarm. According to the author, "U.S. chains remain in a wait-and-see mode when it comes to this technology, despite the potential benefits."

PSC's U-Scan system is designed to eliminate the need for multiple, express-lane cashiers. By using the U-Scan self-checkout system, one cashier can take the place of four. In the typical installation, there are four self-checkout units and one cashier's station. From his/her station, the cashier has a clear view of each of the four self-checkout units. So, customers' use of the self-checkout units may be monitored from one central location.

The new PSC self-checkout system performs an elaborate list of functions. A touch screen as well as voice instructions guide shoppers through the entire checkout process. A scanner/scale reads the bar codes on labeled products and weighs items such as produce that do not have bar coded labels. A hand-held scanner is available to read bar codes on heavy or oversized items. Alcohol and cigarette purchases automatically prompt the cashier to verify the buyer's age.

The U-Scan, all-in-one, self-checkout unit allows customers to pay for their purchases by swiping a credit/debit card, similar to payment at a self-serve, gas pump. In addition to accepting cash and making change, it even allows customers to withdraw extra cash after a purchase, as they would using a check-cashing card. PSC refers to this part of the unit as an electronic tendering system. Coupons, checks, food stamps and gift certificates are presented to the cashier after completing the self-scanning process.

To deter theft or loss due to human error, PSC has incorporated what they call a TripleCheck™ system. Level One in this security system is a sensitive weighing platform that automatically detects any unscanned or substitute items placed in a bag. After scanning their purchases, customers place the items in a carry-out bag which rests on a weigh-scale. The weight of each item in the store has been programmed into the self-checkout unit's memory. If a customer scans a 25 cent pack of gum but places a five-pound beef roast in the bag, the self-checkout system sends an error message to the cashier's station.

The second part of the security system, or Level Two, is a video camera located at each self-checkout unit to discourage item bypass and substitution. The theory is customers are not likely to try to fool or cheat the self-checkout unit if they know they are being video taped.

Level Three in the TripleCheck system is the integrated electronic tendering system, including an

automatic cash dispenser, that prevents "sweethearting" and eliminates checker error in cash transactions. The self-checkout unit "knows" what has been purchased so the customer must give the right amount of payment either in cash or credit/debit card.

*Editor's note: "Sweethearting" refers to the process whereby cashiers pass goods through the checkout without scanning them for the benefit of friends and relatives. According to national statistics, sweethearting accounts for a large portion of the overall shrinkage in the retail environment.*

Although most forms of self-checkout decrease employee scheduling problems, reduce shrinkage and lower payroll costs, the real benefit to the supermarket chains seems to be developing customer loyalty. Customers often view self-checkout systems as a convenience and something "special." Consequently, customers develop an affinity for the particular store that offers these special services. In reality, customers may not leave the store any sooner because they are performing the same operations as a cashier. But, because they are involved in the checkout process, it appears to take less time.

Kroger has installed U-Scan Express self-checkout systems in five stores and will soon add it in a sixth store.

Don Emrah, manager of store operation services, **Kroger Food Stores**, Louisville, KY, stated, "Our consumer research on the PSC self-checkout system has been very positive. Acceptance seems to be universal with the young and old alike. Some of the older self-checkout units in the past had operational problems that hurt the image of the systems. This is not the case with the new units we are using today."

In some cases, a lack of available employees forces companies to make alternative choices such as self-checkout. When we spoke with Emrah, he told us that in certain areas in the South, it is very hard to attract employees to work as cashiers. According to Emrah, there is a lack of people in the 17 to 20-year-old age range, the most common age for cashiers.

In 1984, the average Kroger store employed between 60 and 80 people. Today, in one of its superstores, Kroger employs 200 to 225 people. Because there is a shortage of labor, Kroger has had to raise its wage structure to attract new employees. Self-checkout helps relieve this costly labor dilemma.

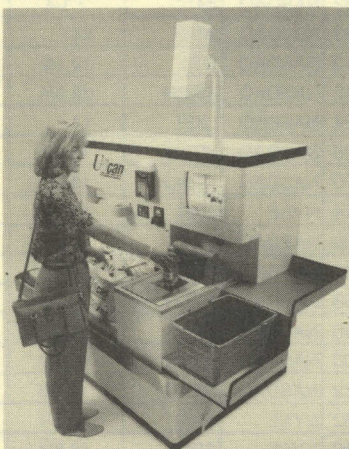
Unlike the Symbol, hand-held, self-checkout

scanners, the U-Scan system is meant for the shopper buying 10 to 15 items. Emrah said the average customer shops 2.4 times per week. The average purchase is \$25-\$26. Over 50% of Kroger's customers making small purchases in stores that offer self-checkout prefer that system over the conventional cashier system.

Kroger officials are contemplating installing U-Scan units in 10 more stores. With over 1,035 Kroger stores in 11 major marketing areas, it is easy to see why PSC views this product as a major part of future sales.

We also spoke with Bernie Rogan, public relations director for **Shaw's Supermarkets, Inc.**, Bridgewater, MA. Rogan had similar comments about the PSC U-Scan system. Rogan added that

specialized system programming is crucial to overall performance. "Pre-programming the U-Scan system for national brand name products is fairly easy," said Rogan. "But we had to teach [program] the system to recognize our own brands. We currently have only one installation using the system but it is the highest volume store in our chain."



*The new U-Scan Express™ from PSC offers user-friendly, self-checkout.*

*Comment: When we viewed the demonstration of PSC's U-Scan Express system at SCAN-TECH our first impression was somewhat negative. Although proponents claimed the system was almost fail-proof, we caught several mistakes. We remembered Harry*

*Knowles' [president of **Metrologic**] comment that "at trade shows, you only get one chance with a potential buyer. If you make a mistake, the opportunity is gone" [SCAN/DCR 6/28/96].*

*However, in our case we weren't buyers, so we wanted to give the new system a fair shake. We contacted several major users of the self-checkout system and none reported operating problems. We can only assume the errors may have been due to the temporary trade show set up or lack of adequate programming for the demonstration.*

*There seems to be little doubt that self-service will be a major part of our future, in all industries. One need only look at how banks are leading customers to use ATMs by levying service charges on "in-person" transactions. Whether it's at the gas pump or the sandwich vending machine, self-service is here to stay. But like electronic coupon scanning [SCAN/DCR 10/25/96], self-checkout has not yet been embraced by large numbers in the grocery industry.*

For more information: **PSC, Inc.**, Webster, NY, PH (716) 265-1600, FX (716) 265-6400. SCAN

# SCAN/DCR MARKET WATCH

## For December 3, 1996

ADC Public Company Names	Phone	Exchange	Symbol	Close Price	52-Week High	52-Week Low	Dividend Yield	P/E Ratio ++	EPS Last 12 Months
Amtec	(214) 733-6059	NASDAQ	AMTC	7 7/8	9 7/8	4 3/4	1.03	n.a.	-0.12
Astro Med	(401) 828-4000	NASDAQ	ALOT	9	10 1/4	7 1/2	1.33	23.68	0.38
A W Computer	(609) 234-3939	NASDAQ	AWCSA	1 1/4	4 1/2	5/8	0	n.a.	-0.61
Bull Run (DataSouth)	(704) 523-8500	NASDAQ	BULL	2 1/4	3 7/16	2 1/8	0	9.11	0.24
Burr Brown	(520) 746-1111	NASDAQ	BBRC	25 3/4	31 1/2	14 1/2	0	13.06	1.99
Caere	(408) 395-7000	NASDAQ	CAER	8 7/8	14	6 3/8	0	26.52	0.33
Checkpoint	(800) 257-5540	NYSE	CKP	24	39	16 3/8	0	43.42	0.57
CSP Inc.	(508) 663-7598	NASDAQ	CSPI	7 1/2	10 1/4	6 7/8	0	190.63	0.04
DH Technologies	(619) 451-3485	NASDAQ	DHTK	24	27 3/4	21 1/8	0	16.95	1.46
Eltron	(805) 579-1800	NASDAQ	ELTN	30 1/2	38 3/4	21 3/4	0	35.88	0.85
Imtec	(802) 463-9502	NASDAQ	IMTC	7 1/4	11 1/4	5 3/4	0	16.86	0.43
International Imaging	(716) 691-6333	NASDAQ	IMAK	24	28 1/2	16 1/4	0	19.09	1.27
Itron	(509) 924-9900	NASDAQ	ITRI	19 1/2	60	14 1/2	0	80.43	0.23
Kronos	(617) 890-3232	NASDAQ	KRON	28 3/4	37	24 1/8	0	20.99	1.37
LXE Inc.	(770) 447-4224	NASDAQ	LXEI	14	16	7	0	280	0.05
Metrologic	(609) 228-8100	NASDAQ	MTLG	13 1/4	16 3/4	8 3/4	0	28.19	0.47
Norand	(319) 369-3100	NASDAQ	NRND	18 1/2	23 3/4	11	0	n.a.	-1.85
Paxar	(914) 697-6814	NYSE	PXR	16 5/8	18 3/4	8 29/32	0	24.63	0.67
Peak Technologies	(410) 312-6000	NASDAQ	PEAK	11	34 3/4	10 1/8	0	19.74	0.57
Percon	(541) 344-1189	NASDAQ	PRCN	11 1/4	19 1/8	7 3/4	0	140.63	0.08
Prologic Management Systems Inc.	(908) 788-9688	NASDAQ	PRLO	2	6	2	0	n.a.	-0.89
PSC Inc.	(716) 265-1600	NASDAQ	PSCX	7 3/4	13 1/2	6 7/8	0	n.a.	-4.66
Robotic Vision Systems Inc	(516) 273-9700	NASDAQ	ROBV	13 5/8	27 3/4	9 3/4	0	17.75	0.81
Scan Source	(864) 288-2432	NASDAQ	SCSC	14 7/8	16 3/4	10 3/4	0	26.32	0.57
Sensormatic	(800) 368-7262	NYSE	SRM	20 1/4	23 3/4	13 5/8	1.11	n.a.	-1.52
Symbol Technologies	(516) 563-2400	NYSE	SBL	48 3/4	49 1/2	31 7/8	0	28.07	1.75
Telxon	(330) 867-3700	NASDAQ	TLXN	11 7/8	28 1/2	9 3/4	0.08	107.95	0.11
Trident International	(203) 740-9333	NASDAQ	TRDT	19 1/2	24 3/4	15 3/4	0	n.a.	-0.1
Vertex	(516) 293-1610	NASDAQ	VETX	1	3 5/16	3/8	0	25	0.04
Western Atlas-parent Co. of Intermec	(310) 888-2500	NYSE	WAI	69 1/4	71 1/8	48 1/2	0	31.72	2.14
Zebra Technologies	(847) 793-6735	NASDAQ	ZBRA	24 5/8	35 3/4	15	0	20.83	1.17

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