



newsletter

Ltd.

The management Newsletter for all industries involved with bar-code scanning and related technologies.

SCANNING, CODING & AUTOMATION NEWSLETTER • 11 Middle Neck Road • Great Neck, N.Y. 11021 • (516) 487-6370

Volume XII Number 4

December 1988

We became somewhat caught up....

....in the "one-year-later" fever and thought it might be of interest to track a select group of public companies, which consider themselves primarily in the automatic identification business. We wanted to see how their stocks have fared 12 months after the market crash of October 19, 1987.

AUTO ID STOCKS - ONE YEAR LATER

	Pre-Crash 10/16/87	Post-Crash 10/19/87	One Year Later 10/19/88	% Change	
				10/19/88 vs 10/16/87	10/19/88 vs 10/19/87
Graphic Technology	\$11.50	\$ 8.88	\$10.75	(- 7%)	+21%
Intermec	18.13	15.00	20.00	+10%	+33%
MSI Data	18.38	16.00	11.00(1)	(-40%)	(-31%)
Symbol Technologies (2)	17.50	14.75	18.63	+ 6%	+26%
Telxon	20.00	16.00	17.25	(-14%)	+ 8%
Dow Jones Ind. Average	2246	1738	2137	(-5%)	+23%

(1) MSI quote as of 9/8/88 just before the start of its acquisition.

(2) Adjusted for stock split.

We left out several of the smaller public companies (Computer Identics, Imtec, Photographic Sciences and Epic Data) because they are not regularly traded or do not follow any established market trends. (MSI Data, which was a special case, in view of its recent acquisition, might also have been omitted.)

So, although the one-year snapshot may be interesting, the question remains: Do the auto ID stocks follow the market -- at least insofar as they are measured against the Dow Jones Industrial Average? The answer seems to be: "Probably, somewhat" -- although these meager, highly-selective data may not prove the case.



ISSN 0273-3080

INCLUDING THE INTERNATIONAL EDITION

It didn't take long....

....for the Intermec Board of Directors to take steps to avoid any hostile takeover attempts such as befell MSI Data in September (SCAN Oct 88, Nov 88).

The Board adopted a Stockholder Rights Agreement -- which the financial world more commonly refers to as a "poison pill." Essentially the Rights Agreement provides that every shareholder (as of 10/24/88) will receive a non-taxable dividend of one Right for each share of common stock. Each Right entitles the shareholder to purchase additional shares (\$190 worth) at half their value.

The kicker, of course, is that the Rights can only be exercised when the Board says they can -- specifically if there is a so-called "hostile takeover" attempt. A hostile takeover is defined as one in which the acquiring company or individual attempts to negotiate a purchase agreement which the Board alone deems "not to be in the best interests of the company and its shareholders."

According to the Summary Notice sent to all stockholders, the anti-takeover rights are intended to cause "substantial dilution to a person or group that attempts to acquire the company on terms not approved by the Board."

The Board's action did not require shareholder approval. The letter that went out over Chairman John Paxton's signature advised: "More than 700 other companies have adopted similar plans. The plan does not preclude a fair tender offer and will have no impact on a proxy contest." Paxton added: "The Board has not received any proposal to acquire the company."

As the automatic identification industry....

....matures, there are indications that a few of the independent studies which estimate its current and future market size are starting to agree with each other a bit more.

[We are not sure whether there is a higher degree of correlation because these studies feed off one another; because they all use the same industry sources for their information; or because the source data now available is better than it was a few years ago. We still question both the methodology used in these market surveys, and their definitions of what constitutes the auto ID and bar code industries (SCAN May 87). Our reviews of these surveys, therefore, should not be construed as an endorsement by SCAN Newsletter of the accuracy of any of the data.]

We have spent time poring over the latest report published by the Market Intelligence Research Company (MIRC) entitled *Automatic Identification/Bar Code Equipment Markets*. Here are some highlights from that report:

- The worldwide auto ID market (bar code, OCR, mag stripe, RF and other) will grow at a compound annual rate of 26% -- from a total of \$2.24 billion in 1987 to \$8.60 billion in 1993.
- Bar codes comprised 69% (\$1.5 billion) of the total of all auto ID technologies in 1987 and will maintain that proportion in 1993 (\$6.14 billion). OCR will grow, over the six-year period, from \$126 million to \$247 million; mag stripe from \$283 million to \$1.0 billion; RF from \$58 million to \$166 million; and the "other" category (voice

recognition, machine vision, etc.) from \$231 million to \$1.05 billion.

- Geographically, the total world market in 1987 breaks down to the US (56%), Western Europe (26%) and Asia (18%). These percentages are not projected to change at all by 1993.
- When analyzed by product category, terminals represent 40% of the market; printers/encoders 30%; scanners/readers 20%; and software/supplies 10%.
- Of particular interest was the report's breakdown, by market category, of the sales volume for all auto ID products:

<u>Category</u>	<u>1987</u>	<u>1993</u>
Retail/Wholesale	\$873	\$3,010
Health Care	179	688
Manufacturing	156	1,204
Government	470	1,548
Transportation	134	602
Bank/Finance	380	1,290

(All figures in millions of US dollars.)

The report opens with a primer on automatic identification, then describes the scope of the study and the methodology used, continues with detailed statistical charts on year-by-year breakdowns of the markets, and concludes with profiles of 36 selected companies.

The MIRC results tend to be in line with recent Frost & Sullivan studies, and are not too far distant from the AIM-Europe Clarendon Report (SCAN Feb 87). Although this tends to support our opening thesis that current surveys are producing statistics that are similar to one another, it should be noted that they still disagree very significantly with other published reports. One extreme example is the Bushnell/Ames Study on Radio Frequency (SCAN March 88) which projected that RFID revenues alone would grow to \$1.3 billion by 1991 (vs. the \$166 million projected by this MIRC Study).

The MIRC study (#A257) costs \$995 from: MIRC, 2525 Charleston Road, Mountain View, CA 94043; 415/961-9000.

A generally accepted axiom....

....among the auto ID cognoscenti is that the expanded use of radio frequency for data capture and identification (RFID) has been held back by the lack of universal standards and specifications.

A significant element affecting these RFID standardization efforts is the design of the integrated circuit (IC) chips and modules used in these systems -- specifically for the readers and tags. These tags -- also referred to as transponders, smart cards or memory cards -- are the small portable devices which may contain memory, logic, power conversion, computing or communication functions. The readers power the tag (or card), transmit and receive data from it, and condition the data for interfacing with a computer system.

Single Chip Systems (SCS) of Aurora, CO, which was started earlier this year by Ron Ames and Rich Pollack, was formed specifically to supply standardized IC components to this industry. Ames, the President of SCS, is a recognized expert in the field of RFID. He has been with the Bushnell Consulting Group and Identification Devices and is currently Chairman of the RF/ID Committee of AIM. Pollack, the Executive VP of SCS responsible for marketing and product development, was an independent consultant doing market and technical research for companies which were incorporating RFID into their products.

In an interview with SCAN, Ames and Pollack described the 65 RFID companies selling tags, readers and systems, each using its own specially designed IC chips. Since no two chips have a common format or operate on the same frequencies, the readers of one company cannot gather information from the tags of another.

The primary mission of SCS, according to Ames and Pollack, is to "design and manufacture one common tag and sell that tag to all of the companies in the industry." They believe that industry acceptance of this objective will give their company price, performance and size advantages over the multiple component products currently available. They equate the concept of these standardized tags to the standard symbologies adopted for bar code scanning. The common specifications for UPC/EAN, Code 39 and Interleaved 2/5, for example, allow machine-readable codes to cross industry and geographic boundaries and still be recognized by any scanner.

Although the SCS concept seems very plausible, not all of the component or system suppliers agree with this approach. We spoke with a number of them at SCAN-TECH 88 and many did not want to give up their unique, customized hardware and software which they believe gives them a marketing advantage. Ames and Pollack may have their work cut out for them.

SCS is now part of a public company, having merged with California-based Single Chip Systems International, which specializes in the acquisition and development of companies and technologies related to RFID, memory cards, smart cards and semi-conductors. SCS, Box 441473, Aurora, CO 80014; 303/756-5566.

Not everyone agreed....

....with our conclusion that there were no "breakthrough technological developments" at SCAN-TECH 88 (SCAN Nov 88). Al Wurz, President, owner and founder of AccuSort, called to protest that his company's DRX scanner (DRX stands for data reconstruction) represents a technical innovation.

Although that may be true, we reminded Wurz, we were sufficiently impressed with the technology when it was first shown at SCAN-TECH 87, to have described it in an article last year (SCAN Nov 87). At that time, we characterized the then-unnamed prototypes as "promising."

This year, rather than showing the scanner in their booth in Chicago, AccuSort cautiously demonstrated its production model in a private hotel suite to invited guests only. When I asked Wurz why he was still keeping the DRX under wraps, he replied that he didn't want to be swamped by competitors nosing around trying to copy their technology. "The new scanner," he explained, "can successfully decode a bar code symbol even if it only reads a few bars at a time. DRX validates, stores and compares the partial scans and then the scan

segments are overlaid to assemble and decode the information as complete bar code data."

According to Wurz, his scanners have two major advantages:

1. They need to scan only five bars at a time in each sweep of the laser, which makes the scanner truly omnidirectional. This eliminates the need for any critical placement or angle at which the bar code must be presented to the scanner.
2. This aggressive scanning capability allows sharp reductions in the height of the printed bar code. The resulting reduction in real estate and label size can provide significant dollar savings.

Wurz notes that these featured advantages compensate for printing imperfections and improved tolerance. He sees immediate applications in warehouse and distribution centers (like Federal Express) and he believes that the \$30,000 cost can be recovered fairly quickly -- with savings realized in reduced label expenses and improved operational efficiency.

AccuSort has sold 4 DRX systems to the US Postal Service (USPS). We spoke about these systems with Robert Overholt, project leader with the USPS Research & Development group. One DRX unit has been delivered, he told us, but it is not yet operational because of hardware and software problems that they have been experiencing for about 6 months.

In spite of these start-up difficulties -- not totally unexpected with new equipment and programs -- Overholt expects the system to be up and running by the end of December. If all goes as planned, the additional three units will be shipped and installed at the Greensboro, NC Bulk Mail facility, where all four systems will be under full operational test for 6-8 months. If these tests prove out, an additional 16 systems will be installed at the Greensboro Center. The USPS has 21 such Bulk Mail centers throughout the country and each will be equipped with 18 to 20 of AccuSort's DRX scanners.

According to Overholt, the original USPS Invitation to Bid was sent to BRT (Doylestown, PA), Instaread (now LaserData in Orlando, FL) and AccuSort. The proposed system required the omnidirectional scanning of parcels, moving at 300 feet per minute, with a 6-digit Interleaved 2/5 symbol ("X" dimension of .010"), and an 18" depth of field. AccuSort was the only responsive bidder, and it looks as if they have a lock on about 400 of these systems to be purchased during the next couple of years.

It turns out that we may have been right when we speculated last year that the DRX technology looked "promising"! AccuSort, 511 School House Rd. Telford, PA 18969-1196; 215/723-0981.

We have written....

....in great detail on these pages (most recently see SCAN May 86) about one of the greatest continuing scandals in US industry: The \$250 million coupon rip-off.

Every relevant study that we have seen has concluded that more than one-quarter of a billion dollars of this funny-money is fraudulently redeemed year-in and year-out. The process involves a long list of offenders, from the supermarket checkout clerk who surreptitiously inserts personal cents-off coupons in the register while pocketing the cash; to international dummy corporations set up solely for the purpose of redeeming coupons processed by cooperating dishonest retailers; to the product manufacturers who know what is happening, but look the other way for fear of antagonizing some good retail customers.

In 1986, the Food Marketing Institute (FMI) estimated that all supermarket systems could be upgraded to scan coupons for an investment of \$10,000 per store. If coupons were printed with UPC bar codes and then scanned at the point-of-sale, controls could be installed to avoid fraud and an electronic audit trail would be established so that the tedious and expensive job of hand-counting the billions of redeemed coupons would be eliminated.

Just to appreciate the size of the problem we are discussing, consider the following: In 1987, 215 billion coupons were distributed, of which 7.2 billion (or 3.3%) were redeemed; at an average value of \$.34 per coupon, this amounts to almost \$2.5 billion of coupon-based rebates per year.

As 1989 approaches, the first glimmer of hope has appeared. With more manufacturers' coupons being bar coded, Wegman's Markets (Rochester, NY) has announced agreements with Durkee Foods and General Mills to test coupon reimbursements based solely on the electronic redemption data to be supplied by the retailer.

The Wegman's agreements are an outgrowth of studies that have been underway by a Food Marketing Institute/Grocery Manufacturers Association Task Force. Just listen to the comments by V.O. Hamilton of Proctor & Gamble, who participated in the Task Force: "We have a tremendous opportunity to improve total system efficiency to the tune of \$600-700 million annually." Hamilton estimates that misredemption alone represents \$273 million. The balance of the savings would result from increased checker productivity and substantially reduced labor costs involved in coupon clearing. These figures are all based on redeeming and clearing coupons automatically using front-end bar code scanning.

When UPC was first adopted in 1973, one of the potential benefits that encouraged the major manufacturers to participate and cooperate was the promise that scanning would eliminate coupon misredemption and exorbitant processing costs. It has taken the industry only 16 years to get the project going.

Within the next two to three years....

...the Uniform Code Council (UCC) expects to run out of the 5-digit series of manufacturers' numbers which are preceded by the Number System Character (NSC) "0". The decision has not yet been made as to which NSC will be assigned next (1, 6 and 7 are available).

The move to another NSC doesn't sound too momentous -- except that it may discombobulate some of the supermarkets that installed scanners in the 1970's. Those retailers who only allowed for a 10-digit UPC number in their database (on the assumption that the NSC would always be a zero) will have to make some adjustment when an additional NSC is specified. Hal Juckett, UCC's Executive VP, says the Council is fully aware of the problem and he has promised the industry 18-months notice before any change will be made.

This raises a question that we have addressed many times over the past 12 years: Would this be a good opportunity, we wonder, to encourage all retailers to expand their database files so that they can scan and recognize the 13-digit EAN code and symbol, thus promoting worldwide compatibility?

There was a great deal of smoke thrown up in the late 1970's and early 1980's as to why the US supermarkets could not scan the EAN symbol. It took years before it was fully understood and accepted that it was not a hardware problem (as some had mentioned), but was simply the unwillingness of the US retailers to adjust their databases to accept the 13-digit EAN code and symbol. The simple truth was that they had no real incentive to do it -- the manufacturers of those products that were imported into the US meekly went along and used the UPC symbol even when it meant dual packaging and inventory.

We were reminded of the first annual SCAN Newsletter International Industry Achievement Award which was given to Albert Heijn -- Chairman of the Ahold retail conglomerate and one of the founders and first chairman of the International Article Number Association/EAN. In his November, 1984 acceptance speech, Heijn devoted a major part of his address to the need for the total US acceptance of the EAN code and symbol. He pointed out that it is an issue that has caused a great deal of concern among the Europeans.

UPC/EAN compatibility among all US retailers has been a long time coming. This may be an opportunity to open the door and it should be fully explored.

A new application for bar coding....

...has been developed by the *Identification Journal (IDJ) Magazine* for use with their "Bingo" reply cards. The concept works something like this:

1. All address labels on the outgoing magazines are to include a bar code which incorporates a Unique Reader Number (UNR) to identify each subscriber. The UNR will be a 5-digit number in Code 128-Subset C.
2. If a subscriber is interested in receiving information by using the magazine's Bingo Card, he is instructed to lift the bar-coded label off the front of the magazine, place it on his reply card and mail it in.
3. *ID Journal* will then scan the label to identify the inquirer and, using a bar-coded menu card, scan/enter all of the requested items.
4. Before sending each inquiry on to the individual advertisers, the label's UNR is matched up with the *IDJ* database to provide a complete profile of that subscriber, including company size, purchasing background and SIC.

ID Journal plans to test this system with their November-December issue and expects full implementation with the January-February 1989 edition. In the auto ID industry, *ID Journal* is running third, in a field of three, in circulation and advertising revenue. Publisher David Hackmeister believes that *IDJ* will be the first publication to install a complete system of this kind and he hopes to stimulate advertisers' interest with its unique advantages.

Some random notes....

....on the advertising and promotion efforts of a few of the auto ID companies:

- Both Hand Held Products and Photographic Sciences are vying for the "Top Gun" title. HHP went all out at SCAN-TECH with a simulated fully-operational F-14 cockpit to promote the Laser Wand -- their new non-contact cordless bar code scanning microcomputer. All of their salesmen at the show were dressed in Top Gun pilot outfits. PSC, on the other hand, is pushing their entire line of portable visible laser diode scanners, which they characterize as "innovative Top Guns" -- and the company offers a free, special edition, 20 x 24 print of the Navy's F-14 to remind you of PSC's connection.
- Taking a leaf from the chief grammarian at a leading men's underwear manufacturer, Bar Code Systems (Roswell, GA) has adopted the tag line: "They ain't bar codes -- 'till [sic] this says so!" -- the "this" in the ad refers to their new Analyzer 1000 verifier. We've seen the device -- it's pretty good. Why the semi-literate ad copy?
- Symbol Technologies has adopted an "above the crowd" approach by emphasizing that the "critical advantage" built into their visible laser diode scanners is the name on the outside of the box. "Our VLD is better," their ads seem to say, "because of our label." Not a very strong message, possibly, but when you dominate an industry segment and all your competitors are sharing about 15% of the market, it may be important for the customer to feel comfortable with the reputation and performance of his source. After all, it has worked well for IBM in computers -- even when the computer industry consensus was that "Big Blue" didn't necessarily have the best product.

The seminal work....

....in codes and symbols that was pioneered by the Automotive Industry Action Group (AIAG) in the early 1980's is becoming more and more important in the development of operating guidelines. The AIAG Shipping Label, with its multiple codes incorporating the Data Identifier (DI) concept, is a model other industries are finding useful as a starting point for their own specifications.

A recent example is the excellent AT&T Shipping and Receiving Bar Code Label Standard, which establishes common label and data field formats for the company, and which conforms to similar standards proposed by the Telecommunication Industry Forum (TCIF) and the Electronics Industry Association (EIA).

The AT&T spec contains very specific requirements. It calls for Code 39 at a 6.25 cpi density (narrow bar of .010" and 3.1 ratio), and specifies the exact label size, layout and placement on the package. The Chairman of the AT&T Committee that developed this standard is Allan Gilligan (the 1986 recipient of the AIM/SCAN Newsletter Percival Award). For a copy of the standard, call Gilligan (201/870-7923) or Roy Cann (201/870-7886).

SCAN NEWSLETTER LTD. • 11 Middle Neck Road, Great Neck, N.Y. 11021 • Phone: 516/487-6370 • FAX: 516/487-6449
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