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Almost from its inception....

....the US Department of Defense LOGMARS program has played a major role in the development and expansion of the automatic data capture industry.

LOGMARS (Logistics Application of Automated Marking and Reading Symbols) was adopted by the DOD in 1981-82 after five years of extensive investigation by a coordinating committee representing all of the military services and civilian agencies. The significance of the LOGMARS program was that it was the first major, non-retail application of auto ID to arrive on the scene. (To this day, the one-in-three-million error rate for scanning Code 39 -- that was determined by the LOGMARS study -- is widely quoted by bar code adherents when extolling the potential virtues of this technology.)

Retail scanning had been introduced in 1973 and was already a smashing success by the time the DOD began to implement its LOGMARS program. The UPC/EAN system used in supermarkets was a clearly-defined application with a tightly controlled code and symbol and a very consistent scanning environment. It was the government's LOGMARS program that opened wide the gates to manufacturing, warehouse and distribution usages for auto ID -- involving a much broader range of operating terrain and circumstances.

In addition to lending credibility to this new technology and enlarging its orbit, the government's large contracts for systems hardware, software, supplies and services were a major income source which sustained many fledgling auto ID companies. It was estimated in 1987, for example, that government purchases -- particularly for hand-held laser scanners and thermal printers -- comprised 15% to 30% of the total auto ID business that year.

After a number of procurements -- growing in size and scope each year and regularly won by so-called systems integrators -- the DOD issued its largest Request For Proposal (RFP) for auto ID equipment in 1987. That RFP was a five-year, open-end contract for bar code readers and demand printers and was designated for Army "Non-Tactical" purposes. It was unofficially estimated, at the time, that the total purchases under the contract would exceed $150 million.

For the first time, a prime manufacturer of auto ID equipment was a serious bidder and the eventual winner of a major DOD award. Intermec, which had

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decided to assume the role of primary supplier to the government, rather than serve as a component supplier to systems integrators, won the contract in 1988.

> [Until then, a number of systems integrators from outside the auto ID industry -- such as Syscon and IBIS -- had established a lock on the government business. With their knowledge of federal procurement practices and experienced contract administrators, these specialized organizations were able to subcontract and assemble the system components needed to fulfill these contracts. The challenge to install the necessary staff and facilities, just to prepare a complicated government bid and to administer a contract, was not a casual one. In 1986, for example, Computer Identics, in an unsuccessful effort, reportedly spent $1 million to prepare a bid for the ten-year Army LOGMARS "Tactical" contract, which was ultimately awarded to Syscon (*SCAN* Sept 86, Oct 86.]

All of which is background for the new five-year Automatic Identification Technology (AIT) contract, which one government spokesman told *SCAN* is probably the "largest RFP in the entire Department of Defense that is currently out on the street for bid." The government does not maintain definitive records of the dollar amount of equipment, supplies and services that was ordered from Intermec during the past five years -- individual orders are placed directly by a variety of US government agencies from locations all over the world based on the approved contract listings. Intermec treats this information as confidential but its five-year, LOGMARS-related sales figures have been reliably estimated to run into the "hundreds of millions of dollars."

The most recent DOD-Intermec contract expired in May 1993. The new RFP was sent out in March and is currently under review. Discussions between the DOD and the potential bidders are ongoing. Optimistic participants estimate that the award will be made by the end of this year.

There are indications that Intermec will again be the only auto ID manufacturer bidding (competing against three or four systems integrators). Although Intermec does not report specific sales or earnings on their government orders, they clearly found the last award to be a worthwhile portion of their business. A government executive told *SCAN* that Intermec's performance under the contract was "very professional and businesslike with excellent response time."

The pending AIT contract will include bar code readers and thermal printers as well as, this time, hardware, software and supplies for memory cards, smart cards, voice recognition, mag stripe readers and writers, and RF data communications.

> [The Army is responsible for administering the AIT contract. A separate major program -- Microcircuit Technology and Logistic Applications (MITLA) -- is handled by the Air Force and is also now in negotiation.]

The DOD's overall experience with auto ID has been a positive one. A Department representative told *SCAN*: "There is no resistance in the DOD to expanding the use of auto ID technology in spite of widespread budget cuts in other areas. Since the Persian Gulf [War], there is so much better tracking and better inventory control. Now we know where things are in the whole DOD system. It's what we call 'Total Asset Visibility' and 'Item In-Transit Visibility'. As a result, we do not have to ship three or four of the same items in order to make sure that at least one will get to its destination. The next major application

area would be on the shop floor -- government manufacturing and repair depots -- where we have made only partial penetration."

The auto ID industry owes much to those seldom-recognized government employees who continue to explore the leading edges of automatic data capture and who have taken an active role in putting the technology to work.

For the past twelve years....

....attempts to reduce the trafficking of illegal drugs into the United States have centered on both interdiction efforts (as these illegal substances cross our borders) and eradication programs (aimed at the suppliers in places as remote as Colombia and Afghanistan.

Many analysts now agree that these approaches have not even begun to solve the cocaine and heroin problems. These attempts to control the manufacture and distribution of these drugs have not been successful primarily because of the enormous profits that this "industry" generates.

> Characterizing the drug trade as an "industry" is more than just a casual reference. Unofficial estimates of the worldwide scope of this nefarious business suggest that the total amount of money used to buy drugs is greater than the gross national product of Germany and more profitable than the earnings of all of the Fortune 500 companies combined.

We recently discussed this challenge of how to attack the drug trade with Leonard Storch and Leonard Frank, the founders and chief executives of Cias (New York City), a small R&D company with heavy emphasis on new applications for bar coding. [Cias is an acronym for Currency Identification and Analysis Systems.]

Storch believes that drug money and counterfeiting are undermining the entire United States economy and social life. His theory is that currency is the most essential aspect of the illicit drug industry. "For obvious reasons," he explained, "criminals dealing in drugs do not honor credit cards, nor do they take checks or other financial instruments. Currency, because of its anonymity, is the only convenient medium of exchange available for such criminal activity. If currency were traceable, it would no longer be anonymous. Without an anonymous and convenient medium of exchange, how can high-volume drug trade continue to flourish?"

Storch and Frank have met with numerous US government officials to discuss implementation of a currency coding system and have come away with favorable responses -- but no action. Their new proprietary bar code (named Binary Coded Binary or BCB) was developed with currency coding as one of its specific applications. Storch describes the BCB bar code as "the most reliable and most efficient bar code....[and] the only bar codes that you'll ever need. BCB bar codes are technically perfect." Cias has patents which cover both the BCB bar code and the use of machine-readable coding to detect counterfeit currency and gambling chips.

We reported in great detail four years ago about the issue of currency bar coding, including proposed legislation that was considered by the Senate Banking Committee. Introduced by Senator John Kerry (D-MA), the dual intent of the bill

was to track "marked" money directly back to the major drug dealers and to identify those banks that are wittingly laundering illegal drug profits (*SCAN* Oct 89, Nov 89).

Kerry's proposal relied on the general concept of bar coding, even before Cias became directly involved in this crusade. The legislation called for the introduction of bar-coded currency control in stages, ultimately scanning all bills passing through the banking system -- from the Federal Reserve all the way down to the tellers at the local bank. Every cash deposit and withdrawal would be traceable and would ultimately lead to drug dealers (through money planted during "buys" made by undercover narcotics agents) and to counterfeiters. [A key element in the positive identification of currency would be a bar-coded symbol which, according to a proposed Cias design, includes the serial number and a random check digit that would be virtually impossible to duplicate.]

But the Kerry bill was never implemented. Why not? And why hasn't anyone since tried to find a similar solution to such a major crisis? According to Storch, it has been a combination of bureaucratic inertia and "turf" protection: The Treasury Department was never interested in a technological approach to this criminal and social problem; the Bureau of Engraving and Printing did not want anyone telling them what to print on their currency.

In 1989, the Bureau was immersed in its project to insert a monofilament thread through newly-printed currency paper stock, which it believed would be the absolutely fool-proof way to prevent counterfeiting. The counterfeiters, however, were producing near-perfect duplicates off their color copiers almost as soon as the government presses were rolling with their new models. Recently, there have been news reports that counterfeit bills are flooding the US market from outside the country and that they are so good -- with the monofilaments -- that even the Feds can't pick them out of a batch of real money.

On September 17, 1993, the *New York Times* reported: "Nine months into the Clinton Administration, fundamental changes in the way the United States fights the drug war are under way." This new strategy formulated by the Drug Enforcement Administration will reportedly concentrate on a handful of top crime leaders responsible for most of the world's cocaine and heroin trafficking and will reduce the broad-based efforts to stop the drugs at their many sources in South America.

The plan was immediately criticized in Washington as just a new wrinkle on the old, ineffective approach of attacking the supply of drugs at their source. According to the *Times*, the government spends about $1 billion-a-year in anti-drug operations overseas, with about 70% of that used to combat smugglers.

Cias' Storch and Frank are also completely frustrated by the DEA's approach, which they feel is unimaginative and just more of the same. They maintain, with great enthusiasm, that they could buy a lot of scanners with a small portion of the government's outlay and could dramatically reduce drug traffic "by as much as 50%" within a few years by using their bar-coded currency control methods.

Cias, 175 West 72nd Street, New York, NY 10023; 212/787-3421.

In its first financial report....

....as a public company, Norand posted excellent sales and earnings for its final quarter and fiscal year 1993 (ended 8/31).

Norand	3 months ended 8/31		12 months ended 8/31	
	1993	1992	1993	1992
Revenues ($000)	51,372	39,101	157,205	114,639
Earnings ($000)	6,073	5,207	8,331	3,398
Earnings/share *	$0.82		$1.23	

[* The company points out that its earnings per share are not comparable for the past two years because the number of common shares was greatly increased as a result of the public offering in February 1993.]

The 37% increase in sales and 59% increase in profits compared to last year helped to sustain a healthy stock price ratio of twenty times earnings. (In early October, Norand's shares traded on NASDAQ at about $25.)

[We have previously noted the disconcerting pattern of cramming a disproportionate share of sales and earnings into the fourth quarter. This past year's results reflect 33% of sales and 73% of the profits in the final three months of the year. This disparity has been the hallmark of the company's financial results for many years -- despite management's efforts to even out the quarterly results. This uneven pattern, however, does not detract from Norand's excellent overall performance.]

President Robert Hammer stated optimistically: "We had good momentum going into fiscal 1994 and had a well-developed business plan to achieve continued growth in revenue and earnings."

As an indication of that momentum, Norand announced a major sale ($550,000) to Pace Membership Warehouse (Englewood, CO), a wholly-owned subsidiary of Kmart Corporation. The installation includes more than 230 Norand hand-held terminals and related base stations, communications controllers and software. This system is designed to automate inventory and record-keeping in the expanding fresh meat, produce and bakery departments at Pace Warehouse's stores.

A major factor....

....in comparing the advantages of the various methods of printing bar-coded labels -- thermal, thermal transfer, laser and dot matrix -- has been the cost of the consumables. Although thermal transfer printers are generally acknowledged to yield the best quality symbols, the relatively high cost of the ribbons has been a negative factor for some large volume users.

Last year, we reported that C.Itoh and Ricoh had introduced, at SCAN-TECH 92, a selection of new multi-pass ribbons which cost about twice as much as standard ribbons (*SCAN* Dec 92). While the manufacturers rated them to be useable for up to five passes, the output had to be monitored to be sure that the operator replaced the ribbons before they deteriorated to the point where the printer output did not meet industry standards.

In a unique approach to reducing the thermal transfer cost-per-label, Zebra Technologies has introduced their new "Stretch" Extended Ribbon System. According to Jack Kindsvater, VP Marketing, this factory-installed option to the company's Z140 printer provides significant savings in ribbon costs. "The Stretch system consumes ribbon only when you need it, and at a pace only you decide," Kindsvater explained. "We are running the label at its normal speed (2, 4 or 6 inches per second) and we can vary the rate at which the ribbon moves. When not printing, the ribbon does not move at all and the label stock slides over its specially formulated surface. When you are printing, it moves at one-half, one-third or one-fourth the speed of the label."

Kindsvater readily admitted that this second feature -- slowing down the speed of the ribbon relative to the label during actual printing -- does degrade the quality of the image. Referring to the ANSI system of grading the printed symbols on a scale of A to F, he said: "In the case of retail labels, the actual result [using the new Stretch system] may be ANSI quality of 'C', but why spend more effort and money to obtain 'A' if only 'C' is required?" Kindsvater cautions that the end user must employ verification equipment to "test each application to be certain that the ratio is set so that useable quality is coming off the printer."

Other so-called ribbon-saver methods that are designed to reduce the per-label usage of ribbon involve mechanical methods for raising and lowering the print head while holding the ribbon stationary and moving the label (media) ahead. Although Zebra has carried models with such features in its line, Kindsvater stated that they were not as efficient as the new ribbon system.

The new Zebra ribbons will sell for a little more than twice the price of the standard product. Based on the size of the actual printed area of the label and the ultimate quality required (which determines the ratio of media-to-ribbon movement to be selected), Zebra is estimating that these Stretch Extended Ribbons will yield three to seven times the number of labels. For those applications which do not warrant the use of these more expensive labels, the Z140 printer will still handle the standard one-to-one ribbons.

Zebra, which has applied for patents on the technology, will retain exclusivity and does not plan to license any other company.

> [At press time, we have not yet seen the results of this new printing method -- which will be demonstrated in Philadelphia at SCAN-TECH in mid-October -- and cannot comment on its quality.]

One of the major attention-grabbers....

....at last year's SCAN-TECH in Anaheim was a product that was introduced by a start-up company that was not an exhibitor, and was unveiled in a hotel suite and never shown on the exhibition floor (*SCAN* Nov 92).

The product was a new CCD scanner developed by ScanQuest (San Diego, CA). Dubbed the LaserKiller, this unit had a claimed depth of field of up to 20 inches, depending on the bar code's "X" dimension. For example, a 100% UPC symbol (13.0 mil narrow bar) has a rated "Working Distance" of 1.6 inches to 9.6 inches; a bar code with a 72.0 mil "X" dimension, has a depth of field of 0.5

inches to 20 inches. The unit has no moving parts and manufacturing costs are said to be comparable to those of standard CCD scanners.

ScanQuest's executives made no secret of their intention to position the LaserKiller to compete directly with Symbol Technologies' LS2000 hand-held laser gun. (It is certainly no coincidence that the model number of ScanQuest's lead product is the LK2000.)

This year, ScanQuest will emerge as an exhibitor at the SCAN-TECH show in Philadelphia. We spoke with Alex Roustaei -- Chairman/CEO/Chief Engineer/ Inventor -- on the progress he has made since last year and his future plans. "We will be showing a working, pre-production unit in our booth," he said. "The unit will be gun-shaped, trigger-activated with laser emulations. For retailers who need to replace their LS2000 laser guns, the LaserKiller will be engineered to 'plug and play' with comparable performance at a lower price."

Roustaei disclosed that his company will ship 1,000 units by the end of this year (customers' names will be made available at the show). Full production is anticipated by June 1994. The OS2000 and OS2002 CCD optical scanning engines will be available for sale directly to OEMs. Distributors and VARs will handle marketing of the LK2000 CCD guns directly to the retailers.

We were disappointed....

....when the AIM/US-*SCAN Newsletter* Selection Committee failed to come up with a nominee this year and decided to forego the 1993 Percival Award.

This annual honor is given to an individual or organization from the "user" community who has made an outstanding contribution to the automatic data capture industry. The Percival Plaque has been presented every year since 1982 at the annual SCAN-TECH convention.

The last three awards were made to Bob McQuade/Bellcore (1990); Gary Ahlquist/Eastman Kodak (1991); and David Carlson/Kmart (1992).

It is not too early to submit suggestions for the 1994 award.

Two notable developments....

....have recently occurred at the Uniform Code Council. First, the UCC has formed a Shipping Container Marking and Labeling Committee co-chaired by Dennis Epley (Kraft Foods) and Ward Walkotten (Kmart). Included on the committee are manufacturers, retailers and distributors from the general merchandise, mass merchandise, grocery, foodservice and industrial/commercial sectors.

According to Bruce Philpot -- UCC's Program Manager, National Standards -- one major challenge facing the committee will be to try to bring consistency to the three different UCC-published documents that relate to shipping containers: Interleaved 2/5 Shipping Container Code and Symbol; UCC-128 Serial Shipping Container Code; and Application Identifiers. "The committee will also be looking extensively at pallet standards," Philpot said, "and, although we are

not planning to introduce any new bar codes, we want to bring to everyone an increased awareness of two-dimensional symbologies."

The second UCC development involves new encodation procedures for certain product groups sold in supermarkets. Since UPC systems were first introduced 20 years ago, there have been, at various times, three important commodities which the retailers and manufacturers agreed would not be tracked by individual style, color and size (commonly referred to as stock keeping units or SKUs). These were hosiery, mass market paperback books and greeting cards. The UCC readily recognized that the choice not to record consumer purchases on an item-specific basis violated the underlying principles of the UPC concept. The grocery chains insisted, however, that the very large number of SKUs and the rapid changes in active products made it impossible to handle item-specific transactions for these major commodities.

The first of these commodities to change was hosiery: three years ago, the manufacturers of stockings and pantyhose began to assign UPCs by style, color and size. The change has proven to be beneficial for both manufacturers and retailers, who have easily accommodated the large number of SKUs.

The transition was not as easy with the paperbacks. This time, the battle lines were formed among the retailers themselves. The large mass merchandisers and booksellers were on one side (arguing for change), and the supermarkets were on the other (backing the status quo). The proponents of change won. Led by Dave Carlson, VP Store Systems at Kmart, the mass merchandisers went directly to the publishers and eventually convinced them, last year, that it was in their best interests to go item-specific (*SCAN* June 92, Oct 92). Following additional discussions among the interested parties, it was decided that effective May 1994, the 13-digit item specific Bookland EAN will appear on the back cover of all paperbacks published in the US and Canada.

> [Which is not to suggest that the supermarkets have agreed to go along. They haven't budged from their position, insisting that the old-style UPC price-point symbol appear on the back covers. The only remaining question: Who will apply the special, non-item-specific, UPC price-point stickers on the backs of the books before they are placed on the selling racks in the grocery stores?]

Greeting cards are the last of the three commodity groups to face the uniform coding issue and the situation remains unresolved. According to a spokesman from the UCC: "The UPC encodation on greeting cards is very confused. UPC symbols on these cards can be found to be item-specific, price-point, or even price-point plus 5-digit add-on. There is no consistency among the greeting card publishers and there is no central association or authority to talk to. I do not see any resolution to this problem in the near future."

Once again we exhort the UCC to adopt the basic policy of unifying the UCC and EAN specifications. All US retailers must be encouraged to upgrade their systems to be able to handle the 13-digit code and symbol and to expand their databases to accommodate all products on an item-specific basis.

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