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From a standing start....

....as of mid-1986, the non-grocery retailers have leaped into automation at a remarkable pace. Prodded by the Voluntary Interindustry Communications Standards (VICS) Group, and then enthusiastically supported by the National Retail Merchants Association (NRMA), the program now embraces UPC, electronic data interchange (EDI), and the shipping container symbol (SCS). Department stores, mass merchandisers, discounters and specialty shops are all responding faster than anyone could have anticipated. In an important decision, the Uniform Code Council (UCC) was brought in as the chief administrative agency for the VICS program.

At a February 24 meeting with three of the most active players in this arena -- Bill Sumner (Bullocks), Dave Carlson (K-mart), and Hal Juckett, (Executive VP of the UCC) -- some of the program's current highlights were reviewed:

- Sumner and Carlson, who are members of the VICS Retail Technology Subcommittee, point out that less than 10% of the merchandise arriving in the department stores now has the UPC symbol. Even so, the retailers are expecting to install front-end scanners at a very rapid rate over the next few years. The two industry spokesmen would not be pinned down to any numbers, but they know of almost no retailers who have not accepted UPC in principle, and who are not planning to implement the system in the immediate future.

- The relationship between VICS and the UCC has become even closer with the transfer of the responsibility for the VICS-EDI program to UCC. Juckett sees an expanding role for his organization as the system is implemented among all retailers. UCC has now registered 50,000 companies in the US, plus an additional 10,000 located in Canada and 77 other countries worldwide. NRMA estimates that there are 200,000 non-grocery vendor/suppliers (SCAN Feb 88) and, as a result, the UCC expects the registration total to grow rapidly.

- The VICS group is promoting EDI in parallel with UPC, and the NRMA has put its full weight behind the UPC/EDI programs. During 1988, many special seminars have been scheduled throughout the country and all media are being utilized on a most positive basis. As Sumner pointed out, EDI offers advantages to the manufacturers as well as to the retailers. These benefits have become the "carrot" that is helping to encourage the vendors to UPC source-mark their products more quickly.

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- In those cases where the carrot doesn't seem to be working, Carlson offers his "velvet hammer" to convince the suppliers to get the symbols on their tags and labels. He proposes that store buyers tell their vendor salesmen: "No Symbols, No Scans, No Reorders, No Sales, No Commission Check!"

- A significant milestone was quietly passed with the VICS decision to accept UPC <u>and</u> <u>EAN</u> codes and symbols. The data files and scanners of all non-grocery retailers will accept a 13-digit code and will be able to scan all versions. This past incompatibility has been a major bone of contention in the EAN nations, where vendors are still required to special mark all products destined for the US groceries. The retailers' ability to scan EAN symbols will be particularly significant since a large number of the apparel suppliers are from EAN countries.

- One of the earliest decisions made by VICS was to UPC-code all merchandise -- including apparel -- down to the individual size and color. This resolve came to be known as the "SKU explosion" (up to 1.5 million stock keeping units per store) and taking that path led to the dual problems of managing price-look-up (PLU) files and tag marking. The proposed solution to the PLU challenge is contained in the just-issued *VICS Report on Large-Scale Price Look-up*. The report describes a unique and innovative "Four-Level Architecture" which is designed to more closely resemble the department store environment. For the tag marking problem, VICS has developed a 7-zone tag which is described in a second study, the new *UPC Marking Guidelines for Apparel and General Merchandise*.

- The General Merchandise and Apparel Implementation Committee (GMAIC) -- a group of manufacturers and retailers working within the VICS/UPC framework -- has proposed a major change in the area of the SCS. In a significant departure from the UPC guidelines, the GMAIC has recommended a 20-digit <u>code</u> <u>128</u> symbol as the <u>Serial</u> <u>Shipping</u> <u>Container</u> <u>Symbol</u>. The key operative term here is "Serial." Virtually none of the merchandise in the apparel and footwear industries is shipped to retailers in solid packs of a single SKU. Since each carton contains a wide variety of goods, the intent is to identify individual cartons with unique serial numbers. Based on information transmitted in advance of the shipments, the cartons can be identified as to their exact contents (another key function that will be dependent upon EDI). The code 128 Serial SCS is currently undergoing field tests. Final approval by the UCC Board of Governors is expected on May 10, 1988.

Retail automation has moved well beyond front-end scanning. Where there once was a clear definition of the automation technologies available for the retail, industrial, government, distribution and service industries, these separations are fast disappearing. The basic principles of auto ID, and the systems surrounding it, are evolving beyond specific industry applications. This development may become one of the key driving forces that will fuel the growth of the automatic identification industry.

UCC, 8163 Old Yankee Road, Dayton, OH 45459; 513/435-3870.
NRMA, 100 West 31 Street, New York, NY 10001-3401; 212/244-8780.

<u>Our overview and analysis</u>....

....of the <u>NRMA</u> <u>Business</u> <u>and</u> <u>Equipment</u> <u>Exposition</u> last month (SCAN Feb 88)
described the special automation requirements of this rapidly expanding retail
market. As we pointed out, there weren't any technological breakthroughs at
the show, but the products of some of the exhibitors do warrant further review:

- A number of companies were showing so-called "<u>side</u> <u>scanners</u>;" i.e.
  laser devices which are placed on top of the checkout counter rather
  than underneath, as in the traditional supermarket slot scanner
  configuration. With decentralized checkouts, these units can be placed
  on top of existing counters and then connected to POS terminals without
  extensive installation costs. <u>Fujitsu</u>'s "Slimscan" can be set up
  vertically or horizontally and, at $1,995, the company maintains that
  the price is coming down to where hand-held laser scanners and wands
  can be challenged. <u>Datachecker</u> demonstrated their unit, which was
  adapted from the model they introduced in Europe a couple of years
  ago for use in those countries where checkers must be allowed to
  sit (making in-counter slot scanners impractical). <u>Spectra</u> <u>Physics</u>
  demonstrated an upright unit which featured omni-directional "free
  hand scanning." The prototype at the show seemed to have a limited
  scanning field, and wasn't too aggressive in its scanning performance.
  (Production models are scheduled for Spring, 1988.) <u>Kimball</u> <u>Systems</u>
  offered a side scanning, multi-directional, high-speed unit (720-1440
  sps) that was adapted from its baggage handling systems. The company
  wasn't sure where this higher priced ($18,500) unit would fit in a
  retail store environment.

- <u>Symbol</u> <u>Technologies</u>' "Smart Stand" was a fixtured adaptation of their
  hand-held laser scanner, intended to provide hands-free use. S/T
  claims to have installed 90,000 hand-held laser guns in retail stores,
  and the Smart Stand is intended to broaden their product line.

- This year <u>Welch-Allyn</u> made its first appearance at an NRMA show,
  offering wands as a lower cost alternative to lasers. Their pen
  scanners (at about $350 each, in quantity) will interface many POS
  terminals; in particular, it is compatible with the standard OCR ports
  found on many installed cash registers. Welch-Allyn sold a wand system
  to Dillard's stores to scan a special in-store generated code 128,
  which includes the stores' own 12-digit SKU + price.

- <u>Metrologic</u> has been having a great deal of success (over 1000 units
  were recently sold to K mart) with its "Multi-directional" Mini-Slot
  Scanner, which takes up less counter space and uses much less power
  than the regular slot scanners. A new model -- the MS360 -- fits in
  the same smaller fixture as the Mini, but is truly omni-directional
  with a larger scan area. Metrologic has also introduced a new
  hand-held, helium-neon, laser scanner with the laser tube in the handle
  and a much shorter snout for easier handling (priced at $1,390 for
  quantity one).

- <u>Dennison</u> <u>Manufacturing</u> introduced their high-speed Idax 30 printers
  ($15,000) for volume production of bar coded tags and labels.

- <u>IBM</u> did not feature any new hardware, but emphasized that <u>1989</u> will be <u>the</u> year of explosive growth and implementation. They say they are ready with the key elements for this market: data file management and integrity. Big Blue is offering wands, slots and hand-held lasers, and is now trying out new CCD devices brought in from Japan.

It has been said before, and bears repeating: although there may be some hardware innovations designed for this market, the need is clearly for systems integration. Data file management, price look-up, tag and label printing and decentralized scanning locations will present the challenges over the next few years.

The first step required....

....for the operation of any successful auto ID system is the establishment of a coherent coding scheme. The significant success of UPC, for example, is attributable, in no small part, to the rigid adherence to the prescribed arrangement of the numbers assigned to each product.

When the Automotive Industry Action Group (AIAG) began its work in the early 1980's, it was immediately confronted with two major hurdles: how to accommodate the widely diverse numbering systems already installed by most companies in the industry; and how to incorporate and distinguish among the different sets of information that would be required (e.g. vendor, part number, quantity, serial number).

This dilemma was neatly solved by the <u>Data</u> <u>Identifier</u> (<u>DI</u>) concept: assign an alpha character to precede each code number in order to identify its meaning. Thus, "V" would = vendor; "P" = part number; "Q" = quantity; "S" = serial number.

As the list grew, the system attracted the attention of other industries, and the AIAG became an informal clearing house for the assignment of new DIs. By late last year, the AIAG DI Dictionary had grown to 55 line items -- with specific industry variations bringing the total to more than double that number. The DI was now a set of four alpha-numeric characters (a letter preceded by up to 3 digits); and inquiries were arriving from all over the world to add definitions and to assign codes. Although the AIAG continued to act as the registry for the DI Dictionary, it soon became apparent that the project was too large to be handled by one industry agency.

At this point, the <u>Federation</u> of <u>Automated</u> <u>Coding</u> <u>Technologies</u> (<u>FACT</u>) stepped in. FACT, which has been in existence for about four years, is a loosely knit organization, whose members are other industry associations. It was originally conceived as a "users" group, representing those companies that are <u>applying</u> the auto ID technologies, rather than the vendors with their presumed vested interests. By the end of 1987, FACT comprised some 20 sponsoring organizations representing literally thousands of companies.

After searching for several years for a meaningful mission, FACT zeroed in on the responsibility for administering the DI program. At its initial organizational meeting devoted to this project (held on January 7, 1988), FACT drafted a Statement of Purpose, which reads in part:

"FACT has agreed to assume a leadership role in establishing international cooperation among organizations to foster the most widespread acceptance of commonly-accepted definitions for DIs and to develop additional categories as necessary."

At its second meeting on February 10-11, the FACT Technical Committee, which is now spearheading the project, elected Burt Moore as its chairman. Moore is with the Automatic Identification Manufacturers (AIM) organization which provides the administrative support for FACT. (This selection has caused some consternation among a few purists in the industry who have maintained all along that FACT is a users group and should not be tainted by association with the largest organization of auto ID vendors -- but that's a story for another time.)

The February 10-11 meeting produced a draft DI Dictionary that will be circulated for comment among FACT members within the next few weeks. A more complete document will be sent out for wider comment after the next committee meeting, which is scheduled for April. One of the ultimate goals of FACT is to be designated as the American National Standards Institute (ANSI) accredited organization responsible for preparing the DI standard.

The Data Identifier Dictionary is a neat solution to a messy problem. FACT invites all trade organizations to join and participate in their work on this project. Corporate memberships are also available to companies which -- like Bell Communications Research, E.I. duPont and Aluminum Company of America -- feel that their interests can best be served by direct involvement.

FACT, c/o AIM, 1326 Freeport Road, Pittsburgh, PA 11238; 412/963-8588.

By the end of its current fiscal year....

....Symbol Technologies (S/T) will probably lay claim to being the largest company in the world dedicated to bar code scanning. S/T may not only be the largest (in sales), but will also be what many consider the most successful (in rate of growth and earnings).

At a mid-February interview at the company's new modern headquarters building in Bohemia, Long Island, NY, Chairman Jerry Swartz and President Ray Martino reviewed the recent history and future plans of the company:

- Symbol Tech wants to be known as a producer of "world class, high quality products." Its new manufacturing facility employs state-of-the-art, automatic storage and retrieval systems (based on bar coding), automated production control (including some robotics) and area access control (with slot scanners). Quality control and production efficiency are constantly emphasized and demonstrated.

- When asked about vulnerability to new technologies and competing products and companies, Martino pointed out that Symbol's sales volume enabled them to take advantage of production efficiencies not available to others. "This means that there is plenty of room to be price-competitive when we have to," he said. Hand-held laser scanning, he added, will retain its advantage over other types of scanning (wands and CCDs) because of its speed, accuracy and ability to read at a

distance (non-contact). Martino commented that visible laser diode scanners, like the one recently introduced by Opticon, are still an unknown factor.

- For now, a great deal of Symbol's emphasis is on marketing. "We are not going to be complacent," Martino emphasized. The company is seeking new applications, new markets and new customers. Currently, retail comprises over 50% of total revenues, most of it being sold to the chains by the company's direct sales force. Government contracts represent about 15% of sales; the balance is distributed among OEM's (Intermec, Telxon, MSI Data), distributors, and some direct sales for industrial and other applications. About 10% of current revenue comes from foreign markets, which are expected to expand at the same rate as US sales for the near future.

- S/T expects to continue to vigorously protect its patent position. Its 1984 patent infringement suit against Spectra Physics was successfully settled a year later (SCAN Dec 85). Still pending is the 1986 action against Opticon. Depositions in the Opticon case have just been completed and the litigants are awaiting the selection of a trial date. In Symbol's latest legal move, on January 26, 1988, the company filed suit against Metrologic for infringement of two of its patents. S/T currently holds 10 US patents -- and many in foreign countries -- which have clearly played an important role in strengthening the company's dominant position in hand-held laser scanners.

- Although management will not issue specific sales forecasts, Martino did not take issue with published projections of about $90 million for the current fiscal year (ending 6/30/88). Earnings of $2.10 per share are expected. There was no comment from Martino, however, about reports from a few Wall Street gurus predicting that sales in FY 1989 may reach $125 million and grow to $250 million by 1991. The current pre-tax earnings rate of almost 35% is expected to become more difficult to sustain as the company grows and reaches out to new markets. One measure of Symbol's growth is reflected in the fact that over 50% of their 550 employees have been hired during the past 12 months; 77% during the last two years.

- Martino is not particularly perturbed by the charge that Symbol Tech may be vulnerable to competition and technology changes because it is essentially a one-product company. In an industry where many firms are moving in the direction of systems integration, Symbol continues as a supplier of hand-held lasers and a few peripherals. The only real indication that the company is looking to diversify is its active stance with regard to acquisitions. Symbol Tech tried and failed to acquire the laser scanning division of Spectra Physics last year. With $70 million in the bank, no significant debt and good financial support, the firm continues to seek new candidates, and is well positioned to make such a move.

An observer has some difficulty finding any serious flaw in the rosy pictures almost universally painted about Symbol Technologies. The company now occupies a pre-eminent position in the fastest growing product segment of a rapidly expanding market. Its talented management team seems to have their feet on the ground and their heads out of the clouds (no plush or fancy offices or astronomical salaries as yet). The company has been very instrumental in

raising the visibility of the industry and creating a more positive attitude in the financial markets. (One Wall Street house -- Wood Gundy -- has issued a new, and quite favorable, report on the "Automatic Identification (Bar Code) Industry" which highlights Symbol Technologies, Intermec, Telxon and MSI Data as the key players.)

The year 1988 promises to be a good one for all of the companies mentioned in that report. The phenomenal record of Symbol Technologies singles it out as the company to watch for at least the next few years.

The way Bushnell and Ames see it....

....the radio frequency identification (RF/ID) industry may be entering a period of explosive growth between now and 1991 and beyond. Rick Bushnell and Ron Ames, of the Bushnell Consulting Group, provide an in-depth analysis of this technology in their new study, _Radio Frequency ID -- Technologies, Markets and Applications_.

According to the report (published by Cutter Information Group), RF/ID technology is enormously diverse -- diverse enough to serve a whole new class of ID applications. Bushnell and Ames forecast that by 1991 there could be a potential growth in sales to "as much as $1.34 billion." This represents a 20-fold increase in 4 years, based on their estimate of about $65 million in 1987 revenues. Their projections for potential sales in the intervening years are for $125 million in 1988; $410 million in 1989; and $720 million in 1990. The 1991 total of $1.34 billion includes $865 million for auto licenses, auto vehicle identification numbers (VIN) and baggage tracking -- applications which, the report admits, are practically non-existent today.

The authors strongly hedge their projections, however, with a number of very notable qualifiers and conditions:

1. Support capacity -- i.e. product development and manufacturing resources -- will probably be inadequate to keep up with the growth projections..

2. Application engineering will lag behind market demand.

3. Production of the RF/ID tags is now controlled by companies with access to advanced development and manufacturing capability and is protected by trade secrets, licenses and patents. Manufacturing opportunities for these tags may not be made available to the small supplier companies.

4. RF/ID systems will be more competitive if costs should come down, based on increased manufacturing volume.

The Bushnell/Ames study does present important material about the principles underlying RF/ID and the technology's competitive position vis a vis other auto ID methods. The authors believe RF/ID will grow alongside bar code scanning; they do not foresee that the two technologies will compete head-to-head in very many markets.

However, they do point out significant advantages which they believe radio frequency holds over bar coding: RF/ID systems are not limited to line of sight; provide a read/write capability; carry large amounts of data; have a greater operating range; are more difficult to counterfeit; and can be

considered "intelligent." In addition, they note that appreciable income can be derived from the RF tag or transponder -- compared to little or no income that bar code companies derive from labels.

The thought provoking, in-depth, 219-page study, was based on "an extensive survey of 60 manufacturers active in RF/ID." It costs $2,250 and is available from Cutter Information Group, 1100 Massachusetts Avenue, Arlington, MA 02174; 617/648-8700.

Auto ID and bar code scanning....

....generally provide the building blocks and foundation for electronic data interchange (EDI) systems. The ability to trigger computer-to-computer transactions, such as purchasing and invoicing, is dependent upon standardized code numbers and automated inventory management. EDI, coupled with automatic identification, is growing worldwide and promises to be one of the important factors in reducing costs, turnaround time and error rates at many levels of distribution.

We refer those directly interested in EDI to a relatively new publication, *EDI Executive*. Among the subjects covered in the most recent issues of this newsletter were the significant and concentrated efforts to establish EDI standards, the steps taken by the government to install EDI systems, scheduled conferences on EDI, and new applications and available resources.

The newsletter has just gone monthly (previously 6 times/year) and sample issues and subscription information can be obtained from EDI Executive Newsletter, 1225 Johnson Ferry Road, S.E., Marietta, GA 30068-2727; 404/973-4683.

We are not the only publication ....

....that has recognized the explosive growth and potential of auto ID for the retail sector. The publishers of *Auto ID News* will inaugurate their new bimonthly tabloid *Retail Information Systems (RIS) News* in April, 1988 with a guaranteed circulation of 10,000 subscribers.

RIS News is owned by Douglas Edgell Publications -- not to be confused with Edgell Communications, the giant publishing firm (headed by Doug's father) which was formed last year as a result of the leveraged buy-out from Harcourt, Brace, Jovanovich. Edgell Communications owns *Auto ID News*. Doug and Gabrielle Edgell own Douglas Edgell Publications.

RIS News will target all types of retailers and will cover subjects such as Quick Response, Electronic Data Interchange and Front-End Automation with Bar Code Scanning. The editor and associate publisher of *RIS News* is Georgia Colicchio, who helped the Edgells create *Automatic ID News* three years ago.

In an unrelated move, Russ Adams resigned as editor of *ID Systems* and has joined the staff of *Auto ID* News as a contributing editor. Adams' first article -- on optical character recognition -- will appear in the April 1988 issue of that journal.