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From a standing start....

....just two years ago, the retail (non-grocery/supermarkets) trade has exploded into today's most important market for bar code scanning. The members of the Automatic Identification Manufacturers (AIM), for example, concluded in a recent survey that the retail sector, during the next few years, will be the strongest potential area for bar code technology products.

The retailers are moving so quickly into scanning, and on so many different fronts, that it is becoming difficult to keep current. Although department stores, mass merchandisers and discounters are attracting the most attention, automated checkouts are also appearing at an increasing rate in liquor stores, video shops, pharmacies, furniture stores, apparel boutiques and other smaller outlets.

These efforts are being spurred on by the Voluntary Interindustry Communications Standards Committee (VICS); the General Merchandise and Apparel Implementation Committee (GMAIC); and the Quick Response (QR) concept. Two other organizations which are very much involved in this alphabet-soup of names are the Uniform Code Council (UCC), which is administering the standards for the non-grocery retailers -- as it does for the supermarkets; and AIM, which is providing technical support through its Technical Symbology Committee (TSC).

We have prepared this special Retail Roundup Report in order to to provide some key highlights and a general overview and perspective of automatic identification activities in the fast-growing retail market.

QR, UPC, and EDI

Quick Response (QR) was an idea whose time had come. In 1985-86, the apparel manufacturers were goaded into action by the enormous inroads of foreign competition. The retailers, particularly the department stores, finally recognized that they had to do something about excess inventories, constant markdowns, long lines at checkouts and lack of accurate, up-to-date information.

Both groups awakened at almost the same time to the realization that the technology was available to attack all of these problems: the grocery industry had proven, over a 10-year period, that UPC-based retail scanning

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works; and electronic data interchange (EDI), which was springing up all over the world, had demonstrated that it could provide the means to establish instant communication links between suppliers and customers.

The turning point was the landmark meeting called by Roger Milliken on June 24, 1986 (SCAN July 86) from which the QR concept and the VICS organization emerged. The apparel manufacturers were determined not to lay down and roll over in the face of price competition from abroad. They set out to prove to the retailers that QR, employing UPC and EDI, could reduce turnaround time -- and thus excess inventories and price markdowns -- which would ultimately result in increased profits.

The VICS group quickly convinced the National Retail Merchants Association (NRMA) to fall into line. NRMA abandoned its support of the long-failing OCR systems, and enthusiastically embraced UPC/bar code scanning. The UCC was brought in to coordinate standards and to help with education and implementation. Special procedures, specifications and services were instituted to accommodate the unique needs of this new group of retailers. The industry was off and running.

SERIAL SHIPPING CONTAINER SYMBOL

It quickly became apparent that the procedures and specifications that had been laid down for the grocery trade had to be augmented for the new scanning environment of the retailers. With more than one million line items in a typical department store, and with merchandise arriving from thousands of suppliers, the problems were different. To take just one example of these differences, most apparel items are not shipped in solid packs of the same SKU, and the UCC Shipping Container Symbol will not work for these cartons.

At the UCC's May, 1988 Board of Governors meeting, therefore, the Council adopted the proposed code number format for the Serial Shipping Container Symbol (SCAN March 88). This new approach was to provide for the unique numbering of each carton in a shipment. The final decision on the selection of the Code 128 symbology was made in July as a result of the special field test evaluation commissioned by the UCC, with technical guidance provided by the AIM/TSC group. According to UCC Executive VP Hal Juckett, this study was coordinated with the International Article Number Association/EAN (which is expected to adopt the same code and symbol).

BULLOCKS

In 1984, the first department store to adopt UPC scanning was Bullocks (Los Angeles), then a division of Federated Stores (SCAN Dec 84). The Bullock's decision was an important test which proved that UPC could work in such a large retail outlet. Under the supervision of its MIS Director, Bill Sumner, Bullocks has accelerated its installation of scanners and, as of this month, all of its 22 stores will be partially automated.

Merchandise will be automatically checked out, with full Price-Look-Up, in six departments: men's clothing, domestics, housewares, shoes, hosiery and intimate apparel. According to Sumner, these departments comprise about 225,000 SKUs. He estimates that the level of UPC source-marked merchandise received in the chain's warehouse ranges from about 10% in shoes, to an estimated 90% in domestics (sheets, pillowcases). He has

found vendor cooperation to be outstanding, and he predicts that even the cosmetics industry -- long a UPC holdout -- will be source marking next year, led by the industry leader Estee Lauder.

SIDE SCANNERS

Store scanners are changing shape. In the groceries, the under-the-counter, flat-top slot scanners are still the most prevalent equipment, although interest is growing in other systems that are now being offered. These newer units include smaller PC-driven systems and the newly arrived "side scanners." (Side scanners were originally designed for the European supermarkets to accommodate local regulations which mandated that checkout personnel must be allowed to sit while performing their tasks.)

In the US, the major market for the side scanners is expected to be the non-food retailers, where some consider top-of-the-counter installations more advantageous than the traditional flat-tops. Datachecker, however, (with about 2,500 side scanners already installed overseas) is not overlooking the food stores and is testing their SABR (Side Acquisition Barcode Reader) units in selected supermarkets. These tests include one with the Cub Foods' Colorado Division, and another with a Kroger superstore in South Carolina.

The potential US market for retail scanners has been estimated at about 280,000 department store checkouts and 180,000 discount store checkouts. One scanner manufacturer confided to us that he believes that as many as 60 to 70% of those registers will be converted to scanning within a few years -- although not all of them will be side scanners, by any means.

Spectra Physics (Eugene, OR), the world's largest manufacturer of laser slot scanners, is going straight for the non-food retailers with their "Freedom Scanners." The product name, which reflects the no-hands operation featured by this above-the-counter side scanner, is aimed directly at the hand-held laser guns, which Spectra considers its major competition. Spectra is aggressively promoting what it believes to be the advantages of its helium-neon, laser side-scanner: no cord or clutter, ability to maintain customer eye contact, design flexibility for different environments, autodiscrimination selection by the end-user, and competitive pricing.

Spectra field-tested 100 Freedom Scanners in various retail environments -- department, discount, drug and apparel stores -- and expects to be able to make volume shipments by the end of this summer. Distribution will be through OEMs, distributors and direct sale -- list price is $1395.

UPC PRODUCT REGISTRY

When UPC was first introduced in 1973, the total concept was outlined in a report prepared by consultants McKinsey & Company. In detailing the 12-digit code structure, McKinsey recommended that the so-called manufacturer's number be issued and controlled by a central registry, but that the product numbers should be assigned by each company and then communicated directly to their customers. McKinsey specifically stated that a product registry was not feasible nor desirable.

What McKinsey and the UCC did not foresee, 15 years ago, was individual retailers with up to 2 million line items, and manufacturers with literally hundreds of thousands of SKUs. In addition, there was no clear picture, back then, as to how electronic data interchange (EDI) would be used to transmit orders, invoices and shipping documents -- all based upon the UPC number. The challenge to the vendors to be able to notify all of their customers of number changes on a timely basis -- and for a single retailer to be in current contact with as many as 20,000 suppliers -- was becoming a nightmare.

A study of this problem was recently commissioned by the Carter Hawley Hale department store chain. Their report recommended the creation of a central catalog of all UPC product codes. This catalog would be updated by the manufacturers, who would only have to send information to one location; and it would be accessed from in-house terminals by the retailers, who would be able to maintain their up-to-date item files from one source.

This proposed concept of a central catalog has spawned two new companies. The first is Quick Response Services (QRS), a joint effort by Peter R. Johnson & Associates (a software company) and IBM Information Services (which provided the funds and will handle the marketing). QRS (Greenbrae, CA) has completed its field tests and expects to be writing contracts this month. The second company, still in its testing phases, is General Electric Information Services (Bethesda, MD). Both the IBM and GE operations are heavily involved in EDI and see the UPC catalog as a direct tie-in to their businesses.

<div align="center">Comment</div>

If there is one critical message that we want to get across, it's this: Suppliers of scanning hardware, software and systems had better not fall into the "looks-like-a-duck, walks-like-a-duck, quacks-like-a-duck" syndrome. General retailers -- department, discount, mass merchandise stores -- are not supermarkets. Their needs are different and old solutions may not work, even though UPC and EDI form the foundations for both. Those who recognize the differences and special needs will be able to gather significant rewards from the fastest growing scanning marketplace around today.

[For additional background and specific information on this industry, see SCAN Mar 88, Feb 88, April 87, Feb 87, Jan 87, Sept 87, July 86. Also, keep up with the latest developments by planning to attend NRMA's Information Systems Conference (October 2-5 in Washington, DC), and SCAN-TECH/Retail, AIM's new show targeting the retail trade (March 21-22, 1989 in Dallas)]. VICS recently retained Arthur Andersen & Co. to conduct a study of the costs and benefits associated with UPC and EDI. We will be reporting results as they become available in the Fall.]

It seems to be getting....

....tougher and tougher for public companies to maintain their equilibrium in this skittish stock market. During this past month there were two examples from this industry of how this instability might tend to provide top management with large headaches:

- On July 20, <u>MSI</u> <u>Data</u> sent out a News Release reporting increased sales (up 7%) and earnings per share (up 21%) for their first quarter, fiscal year 1988 (ended 6/25). So why did the American Stock Exchange suspend trading of MSI's stock that day, and why did the stock reopen on July 21 at 10 1/2, down over 25%?

  It turns out that there was an immediate flood of "sell" orders, because the July 20th release carried an negative outlook for the company's next quarter, in addition to the positive first quarter results. MSI's News Release had reported: "Current outlook for the second fiscal quarter ending September 24, 1988 indicates the strong likelihood that its revenues will fall short of those reported for the same period of the prior fiscal year and earnings will be substantially below those reported for the same period of the previous fiscal year."

  The amount of the shortfall was not estimated by President/CEO Charles Strauch, who carefully (and somewhat incongruously) stated: "We do not speculate on fluctuations in our quarterly results." He did go on to say: "We remain bullish about the long-term outlook for MSI." Strauch explained that the anticipated drop in sales and earnings for the next quarter relates to "large shipments made to three major accounts in the prior year's quarter [which] are not expected in the second quarter." Strauch would not identify the three accounts, but he emphasized that "fiscal 1989 revenues should be greater than those reported last year."

- Earlier in July, it took a fairly mild comment from one Merrill Lynch analyst, about the possible leveling of short-term earnings for <u>Symbol</u> <u>Technologies</u>, to send that stock tumbling about $5.00, equal to 20% of its value. The analyst had reduced the "intermediate term rating" one notch based on his expectation of a 3-4% decline in fiscal 1989 operating margins. Even though the analyst went on to say that he views Symbol's stock as "fairly valued based on our forecast of 20-25% earnings growth during the first half of fiscal 1989," some stockholders obviously panicked. The stock was sold in very large volume that day.

  During the latter part of the month, Symbols stock suffered another "jolt," and fell a few more points to about $18, when the combined news of flat quarterly earnings from MSI, Telxon and Intermec created a perception of a reduction in the rate of growth in the bar code industry.

  [It didn't seem to bolster investor confidence when the National Association Small Business Investment Companies, a group of leading venture capitalists, selected Symbol Technologies, on July 1, 1988, as their "portfolio company of the year." Previous recipients of that award have been Federal Express, Apple Computer, Cray Research and Intel.]

We commented last year (SCAN Dec 87) about the obsession of US investors with current financial results -- an obsession which, unfortunately, often permeates the thinking of company management. We noted that "significant long-term programs are often sacrificed on the altar of short-term visible progress."

MSI's Strauch also acknowledged this problem when he commented: "We recognize that there are people who are primarily focused on the short-term outlook." Ray Martino, President of Symbol Technologies, put it this way: "It is inevitable that some quarters will be off -- the stock market should not be measuring companies on a quarter-by-quarter basis!"

It's a jungle out there!

An apple is an apple is....

....an apple -- no matter who grows it and packs it. At least that's what the Uniform Code Council (UCC) and the produce industry recently concluded.

In a significant step, the UCC has agreed, for the first time ever, to assign a single manufacturer's ID number to an entire industry. This action was taken for the produce growers (fruits and vegetables) primarily as a result of objections from the food retailers, who were concerned about having to list the same products under many different UPC numbers in their data files.

Under the routine UPC system, the grower/packers each obtained a manufacturer's number and then assigned item numbers to each product. A supermarket, which may buy 3 lb. bags of red delicious apples from five different sources in the state of Washington, would have to list all five UPC numbers in order to track that one product. File size and maintenance have gotten to be enough of a headache for standard packaged goods without this added burden.

The Produce Electronic Identification Board (PEIB), representing the growers, applied to the UCC and received a "Produceland" manufacturer's number. The PEIB then sat down with its members and developed a complete and detailed listing of every fixed weight produce item. This is not as simple as it might seem to us fruit-eaters: For example, for apples alone, there are 37 pages (about 1,500 to 2,000 line items) detailing every type, size and weight. These listings are further broken down by the producing-state or region.

Using this universal numbering system, the retailers can now set up their UPC number files by matching the master list against those produce items they carry in their stores. Each grower does not need to go to the expense of applying for his own company numbers, or setting up an item number system.

According to PEIB's secretary, Bryan Silbermann, this move was inevitable. "The growers are not in any position to dictate the terms and conditions of retail systems," he told SCAN. "The retailers cannot handle data files for these types of commodities and they are in control."

[This same concept may also be applicable to the horticultural growers (plants, flowers) -- although there are indications that some of these companies may be resisting any move to establish an industry-wide list. This reluctance has arisen because the larger horticulture suppliers would like to establish more of a company identity and do not want to be merged into a common industry grouping. A comprehensive report, published earlier this year by The Planting Council (the horticulture industry's trade association), was based on a study commissioned by its PlantScan Task Force. Final decisions have yet to be made for this industry.]

PEIB, Box 6037, Newark, DE 19714-6037; 302/738-7100

In his response....

....to our lead article last month (about the major changes for bar code scanning in the future) our philosopher-friend Harry Burke writes: "You merely recount symptoms rather than outline what is really going on. In actuality, bar coding is breaking out of its labeling shell to become 'barcodese': a basic, flexible instrument-to-instrument communication technique."

Burke outlines for us what he sees as the larger phenomenon of "realtime management." He anticipates that bar coding will become an established tool in the collection of information. He foresees a world in which information will routinely move electronically much faster than the actual items to which the information relates.

Burke further envisions that bar coding will extend into "every nook and cranny of corporate affairs," as well as into the mainstreams of marketing, engineering, production, quality assurance, material control, and accounting. He believes that this acceptance will embrace Management Information Systems (MIS), Just In Time (JIT), Electronic Data Interchange (EDI) and beyond.

At the conclusion of his thoughtful, three-page essay, Burke cautions: "Behind all of the sound and fury is the simple fact that all of the benefits possible to bar coding cannot be achieved by merely jamming the technology down around systems designed for past manual methods. This means that much software will have to be rewritten to take into account the broader implications and finer details made possible by barcodese."

We are looking forward to Burke's new, and as yet untitled, book on automatic identification (now at the publisher and due out early next year). The subject is "integrating inter- and intra-corporate affairs based on an extrapolation of the AIAG (Automotive Industry Action Group) standards." We believe that Burke's previous book (*Handbook of Bar Coding Systems* -- Van Nostrand Reinhold) and his numerous articles and monographs, have established him as an independent, non-conformist thinker whose critical knowledge of this industry deserves more attention that it generally receives.

Harry Burke, 1045 Lee Avenue, Gustine, CA 95322; 209/854-2541.

A new industry study....

....titled *Data Collection Hardware/Software*, *The Factory Market*, has been published by the Bushnell Consulting Group.

The Bushnell report, derived from an industry survey conducted by *Modern Materials Handling* magazine (Cahners Publishing), is based on 1,031 responses to questionnaires that were sent to 3,200 manufacturing companies. The survey questionnaire was designed to determine the type of data collection hardware that is used by these companies. The choices included clipboards, keyboard data entry, bar code reading, magnetic stripe reading, optical character recognition, radio frequency, voice recognition and machine vision.

In at least some operational areas of those companies responding, the raw data indicate that 70% are using keyboard data entry, 12% use bar coding, 4% use other auto ID technologies and 30% are still using clipboards. The study

estimates that 3-4,000 plants are currently using auto ID and forecasts that this number will grow to 17,000 by 1991, and 30-40,000 by the late 1990's.

As part of the analysis, Rick Bushnell has projected his estimate of the total auto ID data collection market, 1987 through 1991. With his permission, we have extracted some of these statistics (in millions of dollars):

	1987	1991
Government	$223	$687
Service	92	309
Retail	311	984
Factory	338	1,600
TOTAL	$964	$3,580

As an indication of the potential factory market still available for auto ID systems, the Bushnell report estimates that the purchases of non-auto ID data collection systems for manufacturing operations was $3.4 billion in 1987, and will still be as high as $2.9 billion in 1991.

The 200-page study costs $595 and is available from: Bushnell Consulting Group, 24 Far View Road, Chalfont, PA 18914; 215/822-6880.

Although there were no significant....

....operating decisions made at the Annual General Meeting of the EAN General Assembly (held in Tokyo on May 20, 1988), the event did mark the passing of an era. Albert Heijn, the founding President of EAN, who has served in that capacity continuously for 11 years, conducted his last general meeting.

Heijn has been succeeded by Jean Collin, Chairman of the Board of Campbell Europe Food & Confectionery NV, and of Continental Foods NV. Collin has been Vice President of the International Number Association/EAN since 1979.

Albert Heijn was the first recipient of the SCAN Newsletter International Industry Achievement Award in November, 1984. This honor was given to him at the inaugural SCAN-TECH Europe in recognition of his "pioneering efforts on behalf of EAN." One of Heijn's major objectives had been to achieve total acceptance of the EAN symbol among US retailers -- a goal he never completely attained. Although almost all non-food retailers in the US can now read both UPC and EAN, the US supermarkets have never made any move to include EAN.

[Heijn is also retiring next year as President of the Belgium-based, Ahold supermarket chain, a company he has been with for 40 years. Ahold was founded in 1887 by Heijn's grandfather. Succeeding him as President of the company, which has extensive retail operations in the US as well as Belgium, will be Pierre Everaert.]

At the EAN General Meeting in Tokyo, three new members were admitted -- Korea, Malaysia and Thailand -- bringing the total to 40 member countries. Next year's meeting is scheduled to be held on May 12, 1989 in the UK.