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The most effective marketing group....

....in the Symbol Technologies organization may prove to be located in the corporate legal department. Through the efforts of their patent attorneys, the company has managed, this past year, to overcome a major portion of their competition for hand-held laser scanners.

During the 12-month period just ended, Symbol's lawyers defeated Opticon in a patent violation suit, "persuaded" Metrologic to give up their hand-held laser scanner product line, sued NCR and Photographic Sciences Corp. over patent infringements, and is currently embroiled with Spectra Physics over a variety of claims and counterclaims (*SCAN* Nov 90; Sept 90; July 90; June 90).

> [Symbol and PSC have been engaged in seemingly amicable discussions, for the past 6 months, to decide how they plan to recognize each other's patents. From all indications, these talks are expected to continue for a few more months before any settlement is reached. The final resolution will probably provide for some cross-licensing arrangement that will satisfy both sides. On the other hand, the outcome of the dispute between Spectra and Symbol is less certain. Unless these two parties decide to talk to each other about their differences, that disputation could drag on for a long time.]

Our attention was again directed toward this subject by the news that Symbol Tech's suit against NCR was settled, this past month, under somewhat unexpected (some might say bizarre) circumstances. On December 20, Symbol announced that "it has dismissed without prejudice its pending patent infringement suit against NCR in view of NCR's decision to withdraw its NCR 7860 hand-held laser scanner from the market."

NCR's Product Manager, Craig Maddox provided *SCAN* with his company's "spin" on these events: "Even though we still believe that our unit does not infringe upon Symbol's patent," he noted, "we chose not to tie up $2 million in legal fees, plus a long, drawn-out suit in order to prove it."

> [As recently as an editorial in the December 1990 issue of *Automatic ID News*, Maddox was quoted as saying that he was "confident" that NCR's new 7860 scanner "does not infringe on Symbol Technologies' patents." Maddox maintained that the scanner "does not have a trigger -- instead it has a light sensor that tells when it's been turned on -- and does not require line-of-sight orientation."]

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INCLUDING THE INTERNATIONAL EDITION

Instead of marketing the 7860 as a hand-held unit, NCR's Technical Marketing Division (Ithaca, NY) will actively pursue selling the 7860 scanner module on an OEM basis to other manufacturers who will incorporate the device into their own equipment. NCR characterizes these component scanning modules as the "world's smallest omni-directional scanners -- about the size of a light bulb." The Technical Marketing Division has targeted several markets, including: point-of-sale for food and drug, general merchandise, hospitality, specialty and petroleum retailers; and applications in such industries as finance, credit authorization, kiosk, lottery, gaming and instrumentation.

According to company sources, they are in the "final stages of closing three such OEM deals for applications for retail point-of-sale terminals and for the office environment." No details have been released about the companies involved, exact applications, when these contracts may close, or when these finished units may be available.

*COMMENT*

*Not everyone accepts the explanation that NCR's decision to withdraw the hand-held 7860 from the market was due to litigation costs. It certainly must have cost a lot more than $2 million to develop and engineer the product and any future market success could have easily recouped those legal expenses.*

*The contrary speculation is that NCR was anticipating problems in competitively pricing the omni-directional unit -- because it turned out to be more costly to build than the bi-directional scanners -- and that there was a limited market for such a premium product.*

*In any case, the settlement removes what could have been a significant and formidable competitor in the hand-held laser scanner market.*

*These favorable outcomes, this past year, might lead one to wonder: Do the attorneys on Symbol's staff work on a sales incentive bonus program?*

**It is not clear....**

....whether the General Assembly of the International Article Numbering Association EAN was totally aware of the implications when it decided, at its annual meeting in Copenhagen last May, to set up its own full-time offices and staff to handle the organization's administrative responsibilities.

Ever since this body was formed in 1977, it has shared office space and personnel with ICOF, the Belgian EAN affiliate based in Brussels. And since then, Etienne Boonet has served as Secretary General to both organizations.

In response to the recent decision by the International Association to establish its own staffing, *SCAN* has learned that Boonet has opted to remain only with the Belgian affiliate. His choice opens up this position with the EAN parent organization, which may have to seek new quarters as well.

Boonet will carry out his international responsibilities until a replacement can be found. Other issues concerning the separation of functions between the two organizations have still to be resolved -- but it is clear that EAN wants a full-time Secretary General, and would have preferred that Boonet remain.

Etienne Boonet has earned a unique and important place in the evolution of the EAN system. We will review his perspectives of the past and future in a forthcoming issue. (By the way, he is also Deputy Mayor of the City of Antwerp -- proving that there is life beyond bar coding.)

**Seven years ago....**

....ANSI (American National Standards Institute) published its standard on Bar Code Symbols on Unit Loads and Transport Packages (MH10.8-1983). This document (incorporating some of the original work done by the Ad Hoc Distribution Symbology Study Group in the late 1970's) provided the first recognized specification for printing bar codes on shipping containers. (The add-on "1983" refers to the year in which this standard was last published.)

According to the Foreword of the 1983 document, MH10.8 defined symbologies (Code 39, Interleaved 2/5 and Codabar), dimensions, tolerances, and other specifications for the printing and placement of the symbols on the transport packages. It did not address the code content in any way; the assumption, at that time, was that each industry would adopt its own coding parameters. This ANSI document only discussed the way in which to translate the information into a machine-readable code and how and where to print the symbol.

> [The significance of international standards for shipping containers has been growing in importance. Unlike unit or product codes, which are scanned and recorded in fairly limited, structured and well-defined environments (retail stores, distribution centers, factory floors, hospitals), the code that is placed on a carton usually passes through many hands. From its point of origin, a carton may travel through various transportation modes, and move in and out of a number of distribution centers before being unpacked at its ultimate destination. Along the way, each handler wants to extract specific, pertinent information as to contents, dating, documentation, routing and destination.
>
> Until now, very little has been done to satisfy the information needs of each of those checking points. For this reason, very few shipping containers are currently being coded in a manner that satisfies anyone other than the suppliers and their immediate customers. It is why the machine-readable code that some transportation companies (like Federal Express) apply to a package when it is picked up will only be useful until that package is delivered by that courier.]

In the intervening seven years, since the ANSI standard was adopted, substantial changes in technology, industry usage and system requirements have created a need for MH10.8 to be reviewed and updated:

- Newly developed symbologies -- notably Code 128 -- are coming into widespread use and acceptance.
- Unique, non-uniform coding systems are emerging from individual industries which are not "transportable" to other industry groups.
- EDI has focused attention on the need to unambiguously identify each shipping carton in a manner that can be understood by trading partners, often crossing many industry lines.

- The increased movement of goods across international borders has highlighted the need for a common coding system.

- Transportation companies -- truckers, airlines, railroads, overnight carriers -- are automating their handling systems based on auto ID systems and would welcome common coding practices.

- Two major efforts were already underway to establish "universal" coding/symbology systems for shipping containers: One by FACT, the other by the UCC/EAN organizations. Each attempt was moving in a separate and distinct direction.

ANSI normally requires that each standard has to be reviewed every five years. In 1988, however, many of the major players who were needed to update MH10.8 were also involved in writing the important new ANSI X3.182 standard for bar code print quality (SCAN July 90). Due to this scheduling conflict, it was decided to wait until that project was substantially completed before undertaking the revision of MH10.8.

The rewrite of MH10.8 for Unit Loads and Transport Packages began in mid-1989 with a newly-constituted committee co-chaired by Allan Gilligan (AT&T) and Gary Ahlquist (Eastman Kodak). The working party now includes members from a broad representation of industries -- including transportation companies, government agencies and many other industry groups.

One of the first moves made by the ANSI committee was to invite the FACT Standard Label Work Group to merge their project (which had been started in July 1989) with the ANSI MH10.8 effort. The goal of the FACT group, which was to develop a common format for all industries, dovetailed neatly with the ANSI objectives.

Once reconstituted, and merged with the FACT group, the ANSI committee moved rapidly and produced a first draft that is now being circulated for comment. According to Co-Chairman Gilligan: "The only similarity between this new version and the original MH10.8 standard is in the document number." The draft of this new standard includes references to all of the known symbologies -- including the two-dimensional stacked variety -- and leaves it to individual industry groups to select the bar code they wish to adopt.

In a significant departure from the original standard, the draft document specifically addresses the code content and the layout of the labels. As presently envisioned, there will be four designated information "Segments": Address, Transaction, Customer and Supplier. Within each Segment, information is further broken down into "Blocks" and "Sub-Blocks." The logical presentation of the data permits trading partners to incorporate all of the information onto one label, or to expand to as many as four labels -- one for each Segment.

To identify the individual blocks of information, the committee chose to incorporate the Data Identifier concept and dictionary, which were originally conceived by the auto industry's AIAG and now are supervised by FACT. This system assigns alpha-numeric codes (up to 4 characters) to designate the various elements of information; e.g. Destination Postal Code is assigned Data Identifier "52L"; Purchase Order Number is "K"; Supplier Part Number is "17P." The Data Identifier dictionary, developed by FACT, has already assigned hundreds of such codes.

In a further step to internationalize its work, the ANSI Secretariat has requested coordination with CEN, the organization charged with preparing the standards for the upcoming European Community (EC-92). No reply has been received as yet.

The work of the ANSI MH10.8 Committee is moving along smartly. However, it would be wrong to come away with the impression that all is sweetness and light in this important effort to install a single, universally-accepted standard for the coding of transport packages. Over the horizon...

A separate major move....

....is underway, in addition to the work of the ANSI MH10.8 Committee, to establish a standard coding scheme for shipping containers. This effort has the powerful backing and enormous prestige of the Uniform Code Council and the International Article Numbering Association EAN. These organizations administer the worldwide UPC and EAN programs now operating in almost 50 countries.

In the 1970's, UCC and EAN adopted the straightforward Shipping Container Symbol (also known as ITF-14 in Europe). With a few slight variations in some EAN countries, the SCS functions as a simple, basic code, which can be matched to a preexisting data base, to identify the product and quantity inside a carton. The 11- or 12-digit UPC/EAN product code is embedded within the 14-digit Shipping Container Symbol Code. For example, a product manufacturer will assign the same specific 14-digit code to all cartons containing two dozen blue widgets, size B. The supplier then notifies his customers of this assigned code and the trading partners can identify the merchandise as needed.

To properly track a carton during its active life, both UCC and EAN recognized that more information was necessary (origin, destination, dating, documentation, etc.). As a first step, in October 1988, a separate "license plate" coding scheme was published which specifically, and uniquely, identifies each carton. Titled, "The Serial Shipping Container Code", the symbol consists of 20 data characters: a 2-digit Code Qualifier; a 1-digit Packaging Type; a 16-digit Identification Number (which includes the company UPC/EAN manufacturer's number); and a check character. Separate studies were undertaken by UCC and EAN to develop a series of supplemental codes which would provide the additional tracking information necessary to complete the coding scheme.

It seemed as if the ANSI MH10.8 Unit Load and Transport Package Committee (see above) and the UCC/EAN organizations were headed in the same direction. Both were developing coding schemes which would provide complete information on a shipping container through its life cycle. Logic seemed to dictate that they should combine forces to establish a common standard.

But this was not to be. The two groups believe they serve totally different constituencies with what are perceived as different coding and marking requirements. The ANSI group includes many industrial organizations which have been committed to the versatility of the alpha-numeric Data Identifiers from their inception. The UCC/EAN approach has always been married to the more rigidly structured, all-numeric codes, going back to their beginnings almost 20 years ago, when they were totally committed to retail.

The net result is that the UCC and EAN organizations will incorporate a 2-digit "Application Identifier" (AI) into the framework of the Code 128 (and only Code 128) Serial Shipping Container Symbol. The AI will replace the 2-digit Code Qualifier that was originally conceived for this code and symbol. This AI concept has already been approved by the UCC Board of Governors; approval by the EAN Executive Board is expected on February 15, 1991.

About 20 AI codes have been established so far. A sampling of these definitions includes: 10 = batch number; 11 = production date (YYMMDD); 21 = serial number; 30 = quantity, each. Following each of these Application Indicators, the related information (e.g. 6-digit production date) would be contained in the specifically defined data fields of the code.

Some individuals still view the UCC and EAN as organizations which are only concerned with consumer-product companies. If this were true, the decision to go with the 2-digit Application Identifiers could be isolated to the retail world, and this would allow the industrial, service and transportation industries to be addressed by the ANSI standard.

The real world is not so simple, however. The fact is that the enormously efficient and successful UPC/EAN product coding system has extended well beyond retail. The UCC, for example, has already issued manufacturer's numbers to thousands of companies producing industrial (i.e. non-consumer) products and this practice is expected to increase in volume over the coming years.

*COMMENT*

*One incident that occurred this past October highlights the depths of the differences between the thinking of the two groups. A member of the Uniform Code Council Board of Governors called to comment on an article in the September 1990 issue of* SCAN *which quoted Bert Moore, Executive Director of FACT. Moore had stated that he believed there would have to be a reconciliation between the FACT (4-character Data Identifier) and the UCC/EAN (2-digit Application Identifier) approaches. The UCC board member disagreed. He maintained that the new UCC Application Identifiers have a "close relationship with FACT, but are better and simplify the codes and are closer to achieving a consensus with an all numeric code."*

*We are not taking sides as to which group -- UCC/EAN or ANSI/FACT -- has taken the right approach. However, we do maintain that there will be many companies who will be caught in the middle trying to reconcile two (or more) non-compatible systems. For example, the manufacturers of products for the electronics industry, or for the automotive after-market, serve both the retail and industrial sectors; and the trucking companies serve all industries. We believe that it is not too late to rethink these positions to try to arrive at a common ground that will avoid the confusion that seems to lie ahead.*

*The net result of the status quo may be to dramatically slow down the adoption of all systems for the identification of shipping containers.*

A great deal of heat....

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....is being generated among the radio frequency data collection suppliers over the advent of spread spectrum.

[RFDC has been around since the 1970's and sales of this type of product have grown to a market size estimated at $100 million per year. Up to now, these systems operated in the 450-470 MHz band -- sometimes referred to as "narrow band" or "UHF." Narrow band transmission requires the user to obtain a license from the FCC which controls the geographic allocation of frequencies. Spread spectrum radio equipment operates in the 902-928 MHz band and no FCC license is required for each location (although the manufacturer is still required to have each device FCC-approved). This system was developed for the military because of its fast response time, high data rates and resistance to jamming. These facts are not in dispute and are accepted by everyone in the industry.]

And now the battle is joined between the advocates of narrow band and spread spectrum! In response to a brief item on spread spectrum in a recent issue (*SCAN* Nov 90), we received a call from Bob Scaringe (LXE Corp.), who is Chairman of AIM's RF Communications Committee. Scaringe feels that there is a broad misconception that spread spectrum is a panacea for all RF applications.

Scaringe concedes that spread spectrum might be appropriate for the retail world because of the "non-licensability" issue. He describes it this way: "If you're a K mart, that has 20 or 30 stores in a metropolitan area, there's probably a good benefit because now you don't have to apply for a license in each store. In fact, if you had to close a store, you could move your RF equipment to a new location since they are all on the same frequency. But, if you had narrow band equipment, and applied to the FCC, you won't get the same frequency. In the retail world, this is probably a big benefit."

In the warehousing/distribution area, however, he describes a different environment. "In this market," he explains, "the spread spectrum features do not offer big benefits because, typically, you are not going to have a high-density of distribution centers all in the same metro area. Secondly, you are probably not going to be in the metro areas to begin with, because most warehouses and distribution centers are located in the outlying regions."

Another part of the misconception being promoted, according to Scaringe, is that spread spectrum is not susceptible to interference. That is not so, he says, particularly as more and more systems are installed. And, finally, and possibly most important, he feels, a single narrow band system can cover a 3.2 million square foot warehouse while spread spectrum can only cover a small fraction of that area.

We also put these questions to Tim Moynihan, Director of Industrial and Retail Marketing for Norand Corp. If Scaringe was upset by what he considers misconceptions about spread spectrum, Moynihan is absolutely incensed on the subject. He directs most of his ire at Symbol Technologies and their Spectrum One System. "Symbol has screwed up big time," Moynihan complains. "They are 6-to-12 months late on fulfilling their delivery promises and their early announcements were just 'vaporware'."

Moynihan systematically takes apart the claimed advantages of spread spectrum:

- Non-FCC licensing: an FCC license should be viewed as an asset and not a burden or liability. There is going to be inevitable interference with spread spectrum systems (caused by the proliferation of devices such as wireless LANs, cordless phones, security systems, RF tags, etc.) and there is no one to monitor the assigned frequencies.

- Faster data communications: this is a trade-off for range. It's true, says Moynihan, that spread spectrum offers transmission rates of 100,000 bits per second compared to the typical UHF 4,800 baud. He points out, however, "the higher the data rate, the shorter the transmission distance."

- Cost: given the reduced range of spread spectrum -- not only due to the higher data rate, but also to the higher frequency and the lower output power (spread spectrum is restricted to 1 watt vs. 2 watts for UHF) -- spread spectrum must increase the number of base stations to match UHF range performance.

Both LXE's Scaringe and Norand's Moynihan admit that there are no definitive answers to these comparisons as yet. Their beef is that the limited field experience and the exaggerated (in their opinion) performance promises of spread spectrum make it premature to arrive at any claims of superiority. Scaringe puts it this way: "As Chairman of the AIM Committee, my concern is that the heightened expectations in this technology do not do the whole industry any good. Those who have adopted spread spectrum are making a big brouhaha out of it. They have some highly visible people testing the system, like the K marts, so it is news. It's something that has to be watched."

*COMMENT*

*Although neither company will confirm it, the impression left is that both LXE and Norand will be offering spread spectrum products in the future, joining the current manufacturers, which include Symbol, Intermec, Telxon, Vertex and Teklogix. The probability is that each wavelength will work best in certain environments and the market will be carved up accordingly. However, the narrow-band-UHF folks feel that inflated claims, wide publicity and premature announcements do not allow for a level playing field on which to compete in the marketplace.*

**Products pop up now and then....**

....that are simple, obvious and fill a long-standing need. That's how we feel about the new software package developed by Bar Code Systems (UK) to check the Print Contrast Signal for UPC/EAN and other printed bar codes.

According to Brian and Liz Marcel of BCS, most packaging people know the basic rules of color when printing bar codes (such as don't use red for the bars, metallic colors cause problems). However, there are many other more specific questions that need to be answered. "For example," they ask, "can a bar code be printed with mauve as a bar color, or powder blue as a background?"

Called the Print Contrast Checker, the new program (which costs 50 pounds) uses the PANTONE Color Formula Guide as its reference. According to the Marcels, more than 500 colors have been programmed to yield over 300,000 combinations.

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