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Are you ready....

....to be "glyphed"? Xerox Corporation says that its patented new technology -- dubbed DataGlyph -- allows "ordinary business documents to carry thousands of characters of information hidden in unobtrusive gray patterns that can appear as backgrounds, shading patterns or conventional graphic design elements."

> [*Webster*: "glyph n. 1. an ornamental channel or groove. 2. a sculptured figure or relief carving. 3. a pictograph or hieroglyph."]

Contrary to early expectations that computers would create a "paperless office," Xerox theorizes that computers actually generate hundreds of millions of paper documents. These documents are described in a Xerox Technical Overview report on DataGlyphs: "We read them, mail them, annotate them, share them, file them, fill them in, and generally use them to organize our activities. But what we *don't* do is give them back to the computer systems that produced them. As far as those systems are concerned, those pieces of paper are dead as soon as they are printed."

The stated purpose of DataGlyphs, the report continued, is to turn ordinary paper documents into an active medium, a "paper floppy," that can carry data between us and the electronic systems that provide our information infrastructure. "Until now," Xerox says, "two problems have sharply limited the use of encoding digital data on documents. The first is aesthetics, and the second is data density -- in particular, the aesthetic impact of very low data encoding densities." Xerox characterizes bar codes as "very low data encoding densities."

DataGlyphs encode information into thousands of tiny, individual glyph elements. Each element consists of a small 45° diagonal line, as short as .01"; each one represents a single binary 0 or 1, depending on whether it slopes to the right or left. For example, /\\/ represents 1001. When these glyphs are laid down on a finely-spaced grid, they form unobtrusive, evenly textured areas, like halftone pictures. DataGlyph areas can be almost any size and shape needed to fit into a document design -- even partially covered by other graphic elements.

The data encoding density depends on the resolution of the printers and scanners that are used. Error correction and data compression systems are available. Comparing DataGlyphs to the PDF 417 two-dimensional symbology, at the same

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resolution and level of error correction, the Xerox report concludes that DataGlyphs have almost twice the data density (500 bytes vs. 270 bytes per square inch). Xerox claims that scannable glyphs can be readily printed on 600 dpi laser printers, and even from fax transmissions.

> Xerox sees this new technology being applied to computer-generated documents which would be glyphed as they are created. Examples cited are:
>
> Spreadsheets (to explain the mathematical relationships underlying the data); duplicated copies of technical journals (to track the royalties payable to the publishers by incorporating glyph scanners into copying machines); Census Bureau forms (to enumerate basic demographic data); and insurance, telephone and utility bills (to avoid costly manual reentry of basic information already contained in the database).

The Xerox presentation of the DataGlyph technology places a great deal of emphasis on aesthetics. The company's report states: "Bar-coded and magnetic-ink-encoded papers are weak approximations, because they drastically change the documents to which they are added....DataGlyphs can be used in documents without distracting their human users. Often, their presence will go completely unnoticed." David L. Hecht, a scientist at the Xerox research center in Palo Alto, CA, told the New York Times (7/10/94): "Bar codes... might be considered to be visually jarring....If you load up a page with bar codes, it starts to look ugly."

Xerox claims that the encoded information in glyphs can be read easily by optical digital scanners. According to a spokesman from Xerox's Desktop Document Systems Division (Palo Alto, CA), the company does not plan to sell any hardware. "DataGlyphs," he told *SCAN*, "can be printed and scanned using off-the-shelf printers and desktop scanners. Xerox has fed this new technology through all of its divisions and each is trying to do something with it. Our division has developed the first commercial product -- a new Windows-based toolkit we call 'Paperware' -- which we will be marketing to software developers."

In its descriptive material, Xerox seems to be positioning DataGlyphs in direct competition with bar codes based on its analyses of data density and aesthetics. It is too early to evaluate whether this new ADC technology represents a market threat to bar codes or an opening of new territories and applications.

When he first took office....

....as Executive Director of AIM/US in April 1992, we asked Don Anderson whether he believed the association should be run by a strong, paid professional staff or by its elected volunteer members (*SCAN* April 92). Anderson replied, without hesitation: "I am more comfortable with...strong volunteer leadership....With that philosophy, however, the members must be willing to pay a hefty price in terms of the hours and effort required."

> [Anderson had succeeded long-time professional staffer Bill Hakanson, who had resigned a few months earlier. Hakanson, a strong hands-on executive, had guided AIM/US through its fast-growing early years. Then, in 1990, Ivan Jeanblanc, who was an activist leader, was elected president -- and a

clash inevitably developed between him and Hakanson. As a result, Hakanson was forced out. What followed was one of the most contentious periods in AIM's history.]

After last year's sale of the SCAN-TECH show, it became apparent that AIM would have to undergo a transformation. As one staff member told *SCAN* last October: "The size, scope and income derived from SCAN-TECH was covering up all of the other AIM deficiencies and diverting the staff away from other important programs. The association must also rebuild its credibility, which has been severely damaged in the past two years. The Board of Directors has been acting as a rubber-stamp organization without the strength to establish policy and direction."

To their credit, the current administration and staff have recognized these problems; a year ago, the Board appointed a Strategic Task Force to address them. Made up of thirteen senior level executives from member companies, the group set about to delineate the boundaries of the industry served by the trade association and to redefine the roles, functions and organizational structure of AIM/US.

The Task Force's efforts have led to an increase in the role of the staff in the management of AIM/US -- a 180 degree turnaround from AIM's previous policies. The responsibility and authority to run the organization have been ceded to the paid professionals. As a result, Don Anderson has become both the president of AIM/US and its chief executive officer.

As a practical matter, this move means that the Board of Directors will set policy and direction; the staff will manage the association. The Board will periodically evaluate the performance of the staff; if the Board does not approve of the way its directives are being carried out, then the executives can be replaced. Anderson recently put it this way: "It will no longer be necessary for elected Member-Presidents to devote 40-50% of their time to AIM activities, while neglecting the important day-to-day running of their businesses."

On July 20, a new set of By-Laws, incorporating these changes, were adopted by the membership. The Board of Directors will now consist of seven members (it was twelve) -- five members-at-large (one for every thirty association members), plus the past Board Chair and the current President/CEO.

Other significant organizational changes include:

- The addition of a new class of "Associate" members (non-profit organizations, the media and other affiliated businesses);
- Elimination of the mandatory meeting attendance requirement (which some small companies found to be a financial burden);
- Designations of the association's officers: Chair of the Board, President, VP Technology and Secretary-Treasurer (other than the Chair, all other officers are professional staff members).

But the most important changes to the "new AIM/US" involve the association's expanded role in market-related activities. AIM officers and staff provided an overview of how AIM intends to make a difference in the marketplace at a series

of "Power of Association" presentations at the June membership meeting.

Anderson recently reviewed these new directions during an interview with *SCAN*.

> "Since the disposition of SCAN-TECH (*SCAN* June 93, Aug 93)," he said, "we will have invested one million dollars to make the transition from what was essentially an organization devoted almost exclusively to managing a trade show to one that is now devoted to association activities. Here are three examples of how we will demonstrate our power as an association to develop the marketplace:
>
> "First, we are investing tens of thousands of dollars in a new publication called *The ADC Advantage*. It will be a bound book, revised annually, that will answer the question: 'Why ADC?' It will explain the technologies in an abbreviated manner with illustrations, case histories and a list of AIM resources. We have already committed to running ads in twenty trade publications and, for every response, a copy of *ADC Advantage* will be sent. Eventually, the book will contain paid ads and will be revenue-generating.
>
> "A second major effort will focus on standards development. We are working toward becoming the established body that will be responsible for all ADC standards activities in the US and to be the representative at the international level.
>
> "The third, and most aggressive, activity is representative of our efforts to expand the market. This past month, we signed a six-figure contract with a consulting firm to undertake a study we call 'The Health Care Initiative.' Its purpose is to identify the players; isolate the audience which presents the greatest opportunities; understand their needs, their lingo and how they view the technology; and describe the best ways to reach that market." [*SCAN* will be reporting additional details of this important study in a future issue.]

In order to accomplish these ambitious programs, Anderson concedes that the association must generate additional funds. Currently, AIM/US is operating at a substantial deficit. "This financial situation was self-imposed," he explained. "We knowingly went into this and agreed that this is what we had to do during this transition. We hope to turn that around and to break even in fiscal 1996 [July 95-June 96]."

Anderson predicts that the dues structure (currently, $1,200 one-time initiation fee, plus $1,200 per year for everyone) will be revised in a few months and that it will be based on company size. The low end may be dropped to half the current rate (to attract more of the smaller regional companies); for those companies with revenues over $100 million, the dues may top out at $10,000. [It is important to note that the agreement to sell SCAN-TECH stipulated that AIM members would receive -- "in perpetuity" -- a 13% discount on space rentals at that annual show. This discount will continue to pay back a very large percentage of the dues costs of all AIM members.]

Anderson predicts that AIM/US will jump to 300 members by the end of 1995 (nearly doubling its current size). "We are investing in the future," he concluded. "We are striving to create a situation where companies will be forced to be members of AIM/US if they want to be players in the ADC arena."

New programs have been started....

....by AIM International (AIMI) to attract additional members and to gain credibility as an international trade association serving the automatic data capture industry.

AIMI has hit a critical stage in its development. During the past year, the revitalized organization has resolved the major differences between AIM/US and AIM/Europe that had almost scuttled the worldwide association in 1992 (*SCAN* Feb 92, Mar 92, Nov 92). Under the leadership of its new Executive Director and reconstituted Board of Directors, AIMI emerged with a revamped charter to serve the international ADC community (*SCAN* Aug 93, Nov 93).

"We have set up some serious programs," Executive Director Brian Wynne told *SCAN* in a recent interview, "and now we need people to step up and participate. We have a good package of substantive benefits and activities, a solid political structure and an excellent over-arching mission. I believe that everyone wants AIMI to be successful. The challenge now is how to get more companies and individuals to participate."

AIMI now has twenty members -- from the US (13), Europe (4), Japan (2) and Canada (1). Wynne has set fifty members as his target by the end of this year and is confident that he will reach that goal.

He has convened a meeting, which he tentatively calls a "Global Executive Summit," scheduled for Chicago during SCAN-TECH 94 in November. "Senior executives from companies with international scope will be invited to this meeting," Wynne explained. "The purpose will be to outline the global agenda for our industry...and firmly establish AIMI as the vehicle for implementing the agenda." And, of course, to persuade these executives to sign up as members of the association.

One of AIMI's current efforts is directed at American companies who "want to unlock the European Market." This program, which represents the type of services anticipated by AIMI, includes:

- "Doing Business in Europe" workshops. (The next one is scheduled for September 8-10 in Chicago.)
- Special AIMI pavilions at major European trade shows (e.g., CeBIT in Hannover). AIMI will provide turn-key furnished booths and translation services to facilitate participation by companies not ready to support their own exhibits.
- Market studies and databases. These will include information and product positioning strategies to assist the marketing efforts of member-companies.

Probably the most significant AIMI function and activity will focus on establishing and promoting international industry standards. An AIMI Technical Council has been set up for this purpose; it is currently made up of representatives from the AIM regional organizations in Europe, the Americas and Asia. Wynne told *SCAN*: "Everyone understood that AIMI was going to be the organization that would drive standards forward. We need greater participation

-- and financial support -- by members and technically qualified individuals."

To accomplish the objective of direct AIMI participation in the development of standards, Wynne recognizes that he faces the daunting challenge of charting a constructive route through the maze of existing governing bodies; i.e., ANSI in the US, CEN in Europe, JIS in Japan and ISO internationally. AIMI will have to navigate carefully among the hidden shoals of local customs, national regulations and regional bureaucracies. It will require a delicate hand, open communication and maximum cooperation among all of these interested parties who do not always welcome outside participation.

Comment

But first things first. In order for AIMI to realize any of its goals, it must obtain -- and soon -- the support of the vendor companies in North America, Europe and Asia.

The future success of these manufacturers may be significantly enhanced by an international trade association -- such as AIMI -- that best represents their global interests. For those companies which have adopted a wait-and-see posture -- seeking an organization that had the full support of the national and regional AIM components -- AIMI is here and the time for action is now!

The pace has slowed....

....and the pressure seems to have abated on the ANSI MH10.8 committee's efforts to publish a standard for Two-Dimensional Symbols for Unit Loads and Transport Packages. Until recently, there was a sense of urgency to complete the work of the committee -- in particular, to select symbologies for the various applications under consideration (*SCAN* May 94, June 94, July 94).

At its July 15 meeting in Minneapolis, the committee approved the recommendation of its Task Force (on 2-D symbologies) to select a single symbology for each of four specific applications: Shipping & Receiving; EDI Messages; Sortation & Tracking; Exchange of Special Data Between Trading Partners. (Another major application -- Small Component Marking -- is not within the purview of this ANSI committee.)

For each application, a complex series of "Selection Criteria Matrices" are being developed to manage and evaluate the required tests and demonstrations. Approval of these selection criteria was almost completed at the July meeting.

Recognizing the complexity of the symbology tests, committee Chairman Gary Ahlquist (Eastman Kodak) issued a request for "existing test or demonstration results" on 2-D symbologies that will assist them in formulating the selection criteria. Ahlquist also updated the ADC community on the current "2-D System Demonstrations" under way at the University of Pittsburgh for the Sortation & Tracking application. He solicited additional participation for that test.

[After a few false starts, the University of Pittsburgh "demonstrations" (they are really tests) established criteria which included locating the symbol and decoding it on the fly at speeds of up to 500 feet per minute

(while varying the distance of the label from the scanner over a range of thirty-six inches).

At the ANSI committee's May meeting, there were three entries for this test: MaxiCode (United Parcel Service); PDF 417 (Symbol Technologies); and Vericode (Veritec). Each sponsor was expected to provide its own scanning equipment since no single reader could presumably handle more than one symbology. (That was one reason why this project was referred to as a demonstration and was not considered a true test.) As of July 15, however, Veritec had dropped out of the Pittsburgh program -- and Symbol decided not to provide their own scanner. The UPS reader will be programmed to decode both MaxiCode and PDF 417.]

Aside from the Sortation & Tracking tests at Pittsburgh, Ahlquist is also calling for "2-D equipment manufacturers/symbology sponsors to participate in a demonstration of their 2-D hand-held and transportable scanners/systems" at the December 13-15 ANSI meeting.

Although no firm time schedule has been adopted by the committee, it has become apparent that any thoughts of completing the symbology selection by the end of this year have been pushed aside. One member told *SCAN* that there has been an informal agreement to complete the selection process by June 1995.

All of the passion and pressure to get the job done sooner seems to have evaporated. The concerned parties have been kept up-to-speed on these developments and the ANSI committee expects full cooperation. Which is just as it should be!

[The situation with the Small Component Marking application is on a totally different track. Although the selection of a 2-D symbology for the semiconductors is being handled by the Electronic Industry Association (EIA), the project is being driven by the three leading companies: Intel, Motorola and Texas Instruments (*SCAN* July 94). Intel says it is exploring alternatives and has not reached a decision; Motorola has been using DataMatrix (ID Matrix) for more than a year; Texas Instruments has expressed a definite preference for Code One.

The latest word from these three major manufacturers is that each will pursue its personal preference for now because of the compelling need in their industry for any usable ADC. At the same time, however, they have informally agreed that they will reach a common decision and will all adopt the same symbology after more extensive tests have been completed by the ANSI committee (and others). This selection process will be fascinating to watch, as each company builds an affinity to a particular 2-D symbol -- and then is asked to switch.]

The largest number....

....of standards currently being developed for the automatic data capture industry -- anywhere in the world -- is under way in the 18-nation European Union (EU). Under the auspices of the Comité Europeén de Normalization (CEN), there are twenty-four separate "work items," each leading to the publication of a European standard.

[We first addressed this important effort five years ago, when the EU was still called the European Community (EC) and comprised only twelve nations (*SCAN* May 89, Dec 89, Mar 90, July 91). A Technical Committee of CEN, designated TC225, was assigned the responsibility for preparing bar code standards. TC225 has had four Work Groups: Symbologies, Quality, Data Content and Applications.

Representatives of the national standards institutes from each EU country are the voting members of TC225. In addition, there are liaison bodies from users groups (automotive, chemical, electronics, retail and steel) and trade organizations (EAN International, AIM/Europe and EDIFACT).]

The development of standards under the CEN rules are painfully slow. For example, the requirement to publish CEN standards -- including drafts submitted for public review -- in English, French and German, can add many months to the approval procedure.

Although only one final document has been published (specifying bar coded shipping labels for steel products), work has been completed on the drafts of an additional twelve standards (these are in the final stages of review and translation). This nearly completed group includes: Symbologies (Codabar, Code 39, Code 128, EAN/UPC and Interleaved 2 of 5); Symbology Identifiers; Data Identifiers; Terminology; and Bar Code Print Quality. Future standards -- currently in the early stages of development -- include Verifiers, Scanner and Decoder Systems, Bar Code Printers, and Bar Code Printing Software.

A key element that makes the CEN standards so significant and powerful throughout the world is that all public procurement contracts from the EU nations (which exceed $150,000) will require that items supplied comply with these standards. Once implemented, it is expected that this compliance requirement will spread to smaller procurements and to commercial/industrial contracts as well.

Comment

If there is no other reason for all hardware and software manufacturers to actively support AIM International and all of the AIM affiliates, it is the work of the standards groups which more than justify any effort or expense.

At the present time, for example, AIM Europe is the only vendor organization with a window into CEN's TC225. (CEN will not allow any non-EU individuals or associations to participate.) It is expensive to sustain all of the time and travel expenses necessary to attend meetings, review documents and keep all association members informed.

AIM International is pledged to support AIM/Europe's work in this arena. Both organizations must receive the funding and technical support of a strong and concerned membership group.

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