

on their regular CLSI equipment in the main library and station branch. On days when housekeeping chores are scheduled, the console operator's job includes turning on the Apples so we can begin serving the public when the doors open at 9:00 a.m. Unless downtime persists for more than a day, no other routines are done except checkouts. Under some circumstances, certain materials might be checked in on the Apple, but it is not desirable to do this for newer materials on which holds may have been placed.

When the LIBS 100 is online again, the checkout station is switched back to normal mode and the Apple takes over the information desk's port for dumping, rendering that terminal inoperative. Dumping continues around the clock until all transactions have been processed from both Apples. Normal activities proceed at all other terminals. Diskettes are dumped in chronological order. As the dumping process operates, a file of transactions eliciting error or exception messages from the LIBS 100 is created on the Apple diskette. This file is available for attention at a later time for manual entry into the database.

The chief asset of the dumping process is the accuracy achieved by automatic inputting. When we used paper and pencil, not only was the original writing time consuming, but manual data entry was difficult because of illegible handwriting, inaccurate transcription of the numbers, inaccurate inputting into the database, and lack of available personnel for the job. The CTI system resolves all of these difficulties, but a price is paid in the loss of the dumping terminal's services. The public may be less disturbed if a terminal in a nonpublic area is used. But to the department involved, access to the database is a central part of their work and its loss severely limits their output. In fact, dependence on the automated circulation system by all departments in the library has been swift and universal even though we originally assumed the terminals outside the circulation department would be used sparingly.

Plans are being made to store personnel records in machine-readable form on diskettes. Other developments are being put on a back burner until we have less frequent

need for the Apples as backups. However, LEVELS, Great Neck Library's Youth Department, has several Apples of its own on which budding "computerniks" practice their art. For them there are few limits to possible applications—perhaps only the outermost boundaries of imagination.

REFERENCE

1. Joseph Covino and Sheila Intner, "An Informal Survey of the CTI Computer Backup System," *Journal of Library Automation* 14:108-10 (June 1981).

Computer-to-Computer Communication in the Acquisition Process

Sandra K. PAUL: SKP Associates, New York City.

In the 1970s, we entered the period of computer-to-computer communication; we now appear to have reached the second stage of development. Today more than seventy publishers are equipped to receive computer tape orders and input them directly to their order fulfillment systems; twenty-six publishers can produce computer invoices and credits for their customers; six are capable of sending monthly updating information about titles, prices, publication dates, and books declared out of print. All of this, however, is based on a system through which computer tapes are sent from buyer to seller and back via the United States mail. The next step—computer-to-terminal or computer-to-computer communication—is just around the corner.

HISTORICAL PERSPECTIVE

How did this happen? It started in September 1974 when DeWitt C. ("Bud") Baker, newly appointed president of the Baker & Taylor Company, envisioned the savings his company could find if their customers provided the International Standard Book Number (ISBN) on their orders. He also believed that the volume of paper created by the computer was expensive and time-consuming for publishers to handle.

Always a visionary, he believed that computers communicating directly with each other would not only save time and money, but would prevent human errors introduced by research clerks or keypunchers. He invited publishers, booksellers, librarians, wholesalers, representatives of school systems, and others to a full-day meeting at the W. R. Grace building.

This diverse group of individuals discussed the ISBN—what it was, what it might do. By the end of the day, the group defined two areas in which efforts might bear fruit. One was educational—publishers needed to be told the importance of printing valid ISBNs on their books, in their promotional materials, in their advertising, and on any other source of ordering information, and on the invoices and packing lists they send to their customers. Wholesalers, librarians, and booksellers needed to be shown the efficiency their use of ISBNs on orders introduces to the fulfillment process at publishing houses and wholesaler offices. These functions were assigned to an ISBN Publicity Committee, chaired by Franklyn (“Lee”) Rodgers of Scribner Book Company. The second function was the design of computer-to-computer formats for orders and invoices that would be keyed to the use of ISBN as title identifier and would be industry-wide in scope. This function was undertaken by an ISBN Data Transmission Committee, chaired by David Wolverton, then of Brodart.

The ISBN Publicity Committee produced a booklet and posters, distributed them at all major conventions, made press releases available, and prepared articles for inclusion in the newsletter of all of the major industry associations. The committee surveyed the use of ISBNs by publishers and published a list of in-house contacts for ISBNs. The committee’s program was a success!

FORMAT DEVELOPMENT

The ISBN Data Transmission Committee had a more difficult task. The first question they faced was one of basic approach. Immediately they decided to proceed with a format for orders rather than invoices. Next, they reviewed the level to which the

format would be directed. Believing it was more appropriate to “crawl before they walked,” they decided to develop a format that could be generated on computer tape, which would be mailed from buyer to seller through the United States mail. Once there had been experience with that format, work would begin on direct computer-to-computer communication formats and protocols. The final decision related to form.

The majority of people volunteering their time to work on this committee came from the major book publishing houses. Additional members included two major bookstore chains, B. Dalton and Waldenbooks; the New York Public Library (NYPL) and three major wholesalers, Brodart, Baker & Taylor, and the Ingram Book Company. Representatives from NYPL, R. R. Bowker Company, and the library wholesaling organizations were familiar with American National Standard Z39.2—Bibliographic Information Interchange on Magnetic Tape. They felt that this standard, which is the basis for the MARC tapes, should also become the basis for an order to be sent on magnetic tape. The majority of the committee, however, was not only unfamiliar with Z39.2, but with the concept of programming for variable length records and/or fields. These data-processing managers argued that the format basically would consist of sending a quantity and the ISBN for each title ordered, not the sending of bibliographic records as such. After review of a strong and well thought out letter from Michael Malinconico supporting the use of Z39.2, the majority held to their decision and the subcommittee, chaired by Tom Brady, then of Baker & Taylor, was assigned responsibility for developing the first computer-to-computer order format. It is a fixed length field and record format.

Debate continued throughout its development. Each publisher hoped to have to do minimal programming in order to interface the new format and the input requirements of his or her specific order fulfillment system. Provision was made for minimal bibliographic information if an ISBN was unknown. Polling of the members resulted in decisions to limit author and title to thirty characters, for instance.

Shortly before the format was approved by the committee, Dick Fontaine, then sales manager of B. Dalton (now president) and Dick Lieberman, sales manager of Random House decided that they would begin sending tapes in the mail as of January 1975. Once the format had been approved, other publishers joined the group. Orders were sent from Baker & Taylor and Brodart to Random House, John Wiley, Prentice Hall, and Doubleday. B. Dalton continued to send Random House tape orders in a slightly different version of the format.

By the end of 1976, it appeared that the task of the ISBN Publicity Committee had become publicizing the order format, rather than the ISBN as such. The two committees decided to merge in March 1977, selecting the name Book Industry Systems Advisory Committee (BISAC), as much because it was a pronounceable acronym as for any other reason. Development of an invoice format, originally considered of immediate importance by Waldenbooks, had been shelved after that company lost interest and the individual chairing the subcommittee working on the format left the field.

The next step became reports of experience with the order format. Fields left open for individual use came under review for standardized coding; procedures were developed for the marking of information on the outside of the tapes and paperwork to accompany it; some publishers refused to accept tapes without ISBNs, while others pondered the procedure to separate titles without ISBN from those with and then merge the two for discounting purposes. With all of its inadequacies, the format was working. Publishers reported saving up to one week of time in processing tape orders. Random House analyzed returns for wrong title or wrong edition one year after they began receiving tape orders from Dalton, Baker & Taylor, and Brodart. They found an extraordinary 47 percent decrease in that type of misshipment to those three customers.

With a few years experience under their belt, BISAC decided to revise the format to accommodate the inadequacies and problems members had found with it. In addition, the R. R. Bowker Company and OCLC, Inc., had just announced their in-

tentions of developing acquisition systems which would replace them in the role of "order forwarders." They would prepare orders for other organizations and transmit those orders, on tape or directly online, to the vendor of the organization's choice. This forced BISAC to include a field for an "order placer" in addition to the traditional "bill-to" and "ship-to" customer name and address. The revision was approved in February 1977 and called "Format #2." (It is this version of the format which has been programmed by publishers and wholesalers noted in the introductory paragraph).

BISAC members began pressuring B. Dalton to convert from their original "pre-format 1" format to Format #2. In analyzing the cost of doing so, Dalton also considered the potential saving they would have if invoices from publishers were received on tape. Although they have never made those figures public, the potential was so great that Jim Nermyr, then their vice president of data processing, agreed to chair a subcommittee to develop an invoice format, paralleling as closely as possible, the order format. Once that was approved Jim made "selling trips" to New York and elsewhere, convincing over forty publishers to program for the invoice format in return for receiving orders on tape in Format #2 from Dalton.

Finally, BISAC members began expressing concern about misinformation on orders and invoices. Typically, when two organizations agreed to communicate using the standardized formats, they would exchange tapes of titles, descriptions, and the appropriate ISBN for each. They would produce error reports and the purchasers would bring their computer records in line with the publisher's. However, once price changes occurred, books were made out of print, or publication dates changed for not-yet-published titles, orders carried erroneous information. To resolve this, a subcommittee, chaired by Andrew Uszak of R. R. Bowker Company, set about developing what has come to be known as the "Title Update Format." This format allows a publisher to send a monthly tape of all titles on file indicating those fields that have changed since the prior month, or simply sending the ISBN and changed field infor-

mation. Six publishers are now sending information in this format to the Ingram Book Company on a monthly basis; others will be doing so shortly. (The format is also the basis for information college textbook publishers send to update the monthly AAP Microfiche Service.)

MOST RECENT CHANGES

At its May 1981 meeting, BISAC approved minor modifications to its order and invoice formats. These changes included increasing the zip code field to nine digits and specifying a seven-digit field for the Standard Address Number. The invoice format was modified to accommodate its use for sending credits as well as invoices. These new formats were released in August 1981 and are "titled" Order Format #3 and Invoice Format #2. We guess that it will take at least a year before the bulk of those organizations now sending tapes in Order Format #2 and Invoice Format #1 program for the revisions.

During 1980, BISAC members began expressing concern that the "crawl before you walk" philosophy had stopped in the crawl stage. Baker & Taylor and Brodart, in particular, expressed concern that the generation of tapes was expensive and using the mails introduced such delays that orders were filled more promptly when phoned into publishers than when sent in the BISAC format. In addition, OCLC, which had programmed the order format into their new acquisition system, agreed that sending this information on tape would be far less effective than transmitting it online to the major vendors. In 1980, BISAC established a subcommittee, chaired by Jim Long of OCLC, Inc., to develop an alternative version of the order format. This version, with variable length fields and records, is intended for use in a communication mode between the main frames of two computers. We expect there will be deep consideration and long debate on this proposed version at BISAC meetings in the next few months, with passage expected in 1982.

Finally, BISAC brought its formats to the attention of American National Standards Committee Z39 (ANSC Z39) when format #2 was completed. At its May 1981 meet-

ing, the committee decided to ask Z39 to officially begin work on formalizing both the Order Format #3 and the new variable-length order-format alternative as American National Standards. The Z39 program committee and executive council agreed; Ernest Muro of Baker & Taylor is chairing the Z39 subcommittee charged with this task.

As BISAC activities became more widely known, this ad hoc committee strained the resources of its volunteer officers in answering requests for information, for copies of the formats, and in preparing and disseminating the minutes of their meetings to an ever-increasing number of interested individuals and organizations. In 1980, BISAC approached the Book Industry Study Group, Inc. (BISG) with the suggestion that they become a permanent committee of that research organization, whose membership also included publishers, librarians, booksellers, and wholesalers, as well as book manufacturers. The BISG agreed and today supports BISAC activities through its offices. At the end of this communication is the address which can be used to request any of the formats from the BISG office.

THE FUTURE

Automation is here and here to stay. Individual libraries that once considered it impossible to imagine being able to afford a computer now have several—and soon will have more—acquisition systems available to them through independent vendors and through the national bibliographic utilities. Wholesalers are gaining computer sophistication, as are publishing houses. As an industry, we are lucky that those volunteer data-processing types who formed BISAC and kept it alive were each willing to make the compromises necessary to provide us with a standardized industry-wide format. Other industries have not been so lucky, with major vendors using their dollar-volume clout to demand that their customers accept orders in their own, unique formats. However, the need for standardization is known. In 1979 the American National Standards Institute approved the creation of a new committee—ANSC X12—Business Data Interchange. This committee is charged with developing a na-

tional standard format for transmission of orders, invoices, and other transactions related to the sale of merchandise, and the payment for that sale through electronic funds transfer. BISAC and ANSC Z39 have been carefully reviewing the progress this new committee is making. It appears that the formats that result from their efforts will be variable length fields and sufficiently general in nature to fit the needs of librarians, booksellers, wholesalers, and publishers, along with those involved in the sale and purchase of all other types of commodities.

The traditions and laws of this country preclude any organization from "forcing" a library to make use of these standardized formats. However, the cost savings, the guarantee of accuracy of the record received, and the speed with which the order reaches the fulfillment center suggest that these formats will increase in use in the future.

We also anticipate that more and more use of the formats will be in an online transmission mode, rather than in the form of computer tapes in the mail. As the volume

of transmissions grows, we expect that some day messages from purchasers will be forced into queues to reach the more popular suppliers. To the extent that the major wholesalers provide terminals to their customers and/or facilities to accommodate a large number of transmissions, their queues may be minimal. However, it will be interesting to discover how individual publishers will cope with this situation.

Readers who are interested in receiving copies of Order Format #3, Invoice Format #2 or Title Update Format #1, should write to: Book Industry Study Group, Inc., 160 Fifth Ave., New York, NY 10010. There is no charge for these formats. If all three are requested and first class mail is requested, postal costs are billed to the recipient. Those interested in active participation on BISAC should send a letter to the organization stating that request. Finally, those interested in receiving copies of the minutes of the bi-monthly meetings held between September and May should send a request, accompanied by a check for thirty-five dollars to the BISG address.



Hungry for answers in the life sciences?

No matter how unusual your search question, the new 1981 **BIOSIS Search Guide** can help you find the right answers. In response to a request for references on "people eating insects as food," an information scientist searched **BIOSIS Previews** online:

"... I wanted a file with a broad subject coverage and wide range of search options. The first step I took in my search strategy was to use the free-text facility for the word 'edible'. Then I used the keywords insect, insecta, and insects, which I identified from the **BIOSIS Search Guide**. The **Guide** also led me to several biosystematic codes..." from a prize-winning **BIOSIS Search Tournament** essay.

For your online searches of biological and medical research, you need *the right words...the right concepts...the right codes...* You'll find them all in the:

1981 BIOSIS Search Guide

The price? Just \$75.00. For further information, or to place your order, contact: BIOSIS Customer Services, 2100 Arch Street, Philadelphia, PA 19103. 800-523-4806 or 215-568-4016.