

# EDI—Slow Walk to Fast Forward

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## **Introduction and History of EDI**

Electronic data interchange (EDI), or the transfer of structured data, by agreed message standards, from one computer application to another by electronic means, has been used in the corporate sector for many years. Large retail companies such as department stores, use EDI to order materials and process invoices. Other industries, such as transportation, banking, and health care, have seen their production rates rise, their services expand, and their staff re-energized by implementing EDI.

EDI was first used in the book industry between book stores and publishers. EDI is now moving into library operations and shows great promise in many areas, including: improving efficiency and accuracy in daily operations; freeing staff from routine tasks in favor of developing high demand, value-added services; as well as realizing appreciable budgetary savings from incentives for participating in electronic commerce.

Friedemann Weigel, Managing Partner and Information Systems Director of Harrassowitz, a German bookdealer, said that EDI is based on two basic assumptions: 1) that communication is the central starting point for organizational and economic improvements in companies and organizations, and 2) that EDI will account for 50 percent to 80 percent of all communication activities between libraries and agents in the next three to five years.<sup>1</sup>

There are several reasons that EDI is not yet commonplace within the library marketplace. Even though standards groups such as SISAC and BISAC are writing and publishing EDI standards, the vendors of library systems in the United States have been slow to implement these standards. This tardiness is at least partially the responsibility of librarians. Joan Griffith wrote that librarians have not done a good job of explaining to library administrators and integrated library system (ILS) vendors that EDI is really a public service issue. “If EDI were sufficiently well understood, it would be obvious that its implementation in technical services has significant repercussions for public services. It is the backbone for improved receipt of material as well as for shipment and cancellation information. Money and time saved in technical services may be reassigned to public service activities or for the introduction of new services in technical services.”<sup>2</sup>

Bruce Compton agrees that EDI implementation suffers from the fact that high-profile development that benefits mainly public services is of greater importance to the marketplace than improving efficiency in technical services. He writes that, “Backroom functionality usually takes a backseat to glitzy new products such as WWW, Z39.50, imaging, and multimedia services . . .”<sup>3</sup> Compton says that we must clearly state in our requests for proposals (RFP’s), our EDI expectations from an

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ILS vendor. He said that such statements are often vague and phrased in terms of functional requirements rather than being specific from a technical standpoint. The real key to the successful development of EDI lies in the formation of development partnerships between all players, the ILS vendor, the library, the book/subscription agent, the vendor of the EDI mapping software, and the communications provider. If EDI is important to libraries, librarians should buy only those systems that support EDI.

Librarians must begin to play an active role in standards organizations such as BISAC and SISAC. As for our material agents, they must get the message that either they implement EDI or risk being left out of the marketplace. Librarians should carefully consider the implications of not introducing EDI.

However, not every business transaction must be run under EDI. Friedemann Weigel writes that, "Very few cost-benefit analyses about EDI have been published. One reason for this lack of information might be the *ceteris paribus* clause, which states that, during a test, only one parameter can be changed, and the rest of the parameters must stay unchanged."<sup>4</sup> It is difficult to assess the costs versus the benefits. EDI in acquisitions can only be properly evaluated when data have been exchanged electronically with several partners for at least a year in routine operations.

### EDI at Georgia State University and Hypotheses

The Acquisitions Department of Georgia State University (GSU) has used the PALS integrated library system since early 1990. One of the unique features of the PALS system is its EDI capabilities. PALS, developed by the Minnesota State University System (MnSCU), has been on the leading edge in the implementation of the X12 standard for exchanging business data electronically since the early 1990's. At that time, Fritz Schwartz of the Faxon Company, used the PALS system to test Faxon's initial EDI activities. In the spring of 1994, when GSU was gathering information about EDI translation packages, Schwartz said that GSU was very lucky to have the PALS system because of its EDI track record.

In the fall of 1994, GSU rebased its PALS software to a version which, for the first time, supported EDI. We immediately decided to implement this feature. Working with our ILS vendor and our subscription agents, we systematically worked through the process of implementation of EDI at GSU. In May 1996 we processed our in-

voice for 1996 renewals with Readmore. The invoice included 2,200 domestic titles and resulted in errors on about 10% of the titles. It took several hours to correct these errors, but this was far less time than it would have taken to post the invoice manually. About a year later we transmitted our first monographic orders to YBP.

We had several hypotheses in mind when we began this adventure. They were:

1) Because Mankato State had been doing EDI for years using the PALS system, it would be relatively easy to a) set-up the process and get going quickly, and, b) be relatively trouble free in the processing of routine invoices.

2) EDI saves staff time and reduces monotony in the routine process of entering data for a million character renewal invoice;

3) EDI cuts down on errors created by repetitious data entry;

4) EDI speeds up the ordering process;

5) EDI cuts down on the paper flow of acquisitions and serials processes;

6) EDI will permit staff to be reassigned and provide services in new areas within existing budgets; and,

7) EDI will give the library increased visibility and recognition within the institution as a whole.

### Review of Hypotheses

Utilizing our working experience with EDI processing with multiple vendors and different processes, we can now examine our hypotheses.

1. The first hypothesis stated: Because Mankato State had been doing EDI for years using the PALS system, it would be relatively quick and easy to set-up the process, and, be relatively trouble free in the processing of routine invoices.

Unfortunately, this hypothesis was not proven to be true. Because of local system and organizational differences we could not simply duplicate Mankato's efforts and expect them to run as a mirror image in our system. The first problem was that we were using the PALS system in different ways from Mankato. We also had a different configuration of staff running the process than Mankato. Mankato had a centralized unit that did all EDI processing for all libraries within the state system. At Georgia State University the work was dispersed among the University's Computer Center, the Library's Automation Coordinator, and staff of the Acquisitions Department. In addition to this, we also dis-

covered that one of our vendors was able to transmit supplemental invoices electronically, but these invoices had to be coded differently than renewal invoices. Mankato had never processed an EDI supplemental invoice and so there was no documentation to help us. Finally, the vendors we were using to process EDI invoices were different from those that Mankato had used. So the vendors also had to solve problems without the help of Mankato.

2. The second hypothesis stated: “EDI saves staff time and monotony in the routine process of entering data for a million character renewal invoice.”

This hypothesis was supported, but only partially. It is true that the monotony of manually keying a million character serial renewal invoice was eradicated in the minutes it took for the X12 process to update the file into the serials system, although the monotony of reviewing the invoices or renewal lists remains. However, the first year and a half of processing invoices took large amounts of human intervention by higher level staff, such as the Serials Librarian and the Automation Coordinator. Work that was previously done by a Library Assistant II invoice clerk is now done by her supervisor. This problem has been in part due to the fact that we were processing additional charge invoices not previously done in our ILS system, and had encountered a negative service charge with one of our vendors because of large credits accrued from the early prepayment of invoices. Those problems have been solved in part and current invoices are not as labor intensive. However, as recently as the 1999 renewal invoice with one of our smaller vendors, we have had difficulty loading the invoice. Since we are migrating to a new system, we have not pursued a solution to the problem. Our second EDI process, sending firm purchase orders in the X12 standard, has gone relatively smoothly. This process is still labor intensive if there is an error in one of the files. If this is the case, then the entire transmitted file needs to be reviewed to find the item with errors and resend it.

3. The third hypothesis read: “EDI cuts down on errors created by repetitious data entry.”

Although we are not certain exactly how much error there was of the manual data entry process, we have yet to find any errors in the processed EDI renewal invoice postings. Consequently, it seems safe to say that this hypothesis is proven correct.

4. The fourth hypothesis is: “EDI speeds up the ordering process.”

This hypothesis has definitely proven to be true. Until last July, when we expanded our approval plan, we processed approximately 100 to 150 firm purchase orders for monographic materials each day. Prior to X12 processing of our purchase orders, this was primarily a manual and paper driven system. PALS produced paper purchase orders in an over-night batch process, which were mailed to the vendor. Once the vendor received the paper purchase orders, they re-keyed the purchase order information into their ordering system. With EDI, our ILS creates an X12 purchase file nightly. That file is ftp’ed from our mainframe to our mailbox, where it is downloaded into a local PC in the Acquisitions Department, run through the EDI templates, and then ftp’ed to the vendor. This whole process takes about five minutes of staff time, and about two hours of local PC time. Once the vendor receives the file, it is uploaded into their system without re-keying data.

5. Hypothesis number 5 reads: “EDI cuts down on the paper flow of acquisitions and serials processes.”

To date EDI has not cut down on the paper flow in acquisitions and serials processes. So, this hypothesis has not proven to be true. There are several reasons why there is no reduction in the paper flow from the EDI process. One of them has to do with the limitations of our ILS system. Unfortunately, even though we may send purchase orders electronically, the PALS ILS system’s printing of those same purchase orders cannot be suppressed without suppressing the printing of all PO’s, whether they are electronic or not. This is a bug in the ILS system. On the serial side, because of the problems we have encountered to date with the processing of serials invoices, we have asked our vendors to send us both electronic and paper. Part of this is to ensure that the electronic files can be trusted to include what we expect on the major renewals. In addition a paper copy is required by our University’s Business Office, although this may change as we implement a new online financial system. Eventually, we do feel that there will be a reduction in paper from this process.

6. Hypothesis six stated: “EDI will permit staff to be reassigned and provide services in new areas within existing budgets.”

As with hypothesis five, this hypothesis has not yet become a reality either when you look at the big picture. It is true that the clerical staff who entered the invoice data manually into our ILS system no longer have that task to do. However, because we are still monitoring the

EDI process, the paper copies of the invoice are being checked against the updated EDI files. A preferred alternative is that we review a renewal list prior to receiving the electronic invoice. This allows us to notify the vendor of changes or errors that can be corrected before the invoice is sent to us. This, we anticipate, will not be needed once we have gone through at least one renewal cycle with Voyager. By then the process should have the most significant problems worked out and we will feel confident in relying solely on the electronic file. Once this is accomplished, then we can look at reassigning this staff time to new responsibilities. One area of staff time that was greatly impacted by the EDI process, and which we had not anticipated, was the increased amount of high level staff time and intervention needed to monitor and work with the process. Because of the numerous technical problems with the process, the senior support staff in both the acquisitions and serials units, as well as the librarians in each of these areas, devoted immense amounts of time making sure the process was successful. In addition to these staff, our library's automation coordinator and the university's system person on the mainframe side, were also significantly involved. As the processes become more routine, we anticipate that the professional level of staff involvement will decrease. However, we do not see an significant decline in the increased senior support staff utilization. The process, even when running smoothly, requires a high level of technical monitoring.

7. Our last hypothesis stated: "EDI will give the library increased visibility and recognition within the institution as a whole."

This hypothesis has certainly proven to be true, not only in increased institutional visibility, but also increased attention at the state, regional and national levels. On the institutional level, our EDI endeavors have been lauded as examples of how the library continues to be on the leading edge of technology. The process is viewed also as an example of how the library utilizes its staff effectively to increase efficiency. Because of our EDI processing, we have also been asked by the university's accounting services to work with them in setting up the electronic transfer of our payment information for library materials directly to their disbursement systems. At present, we are the only unit on campus that has any experience or capability of succeeding in this type of exchange. External to the library, we have been cited as an institution that has successfully accomplished EDI

processing using the X12 format. There have been press releases from our vendors about our joint successes. In addition to this, our librarians have been invited to present papers, give poster sessions and publish articles on our experience with this process. This, of course, has raised consciousness of our institution in the profession.

Currently at Georgia State, we are using EDI transactions in two areas: receiving serials invoices from three major vendors and sending monographic orders to our primary book vendor. With just these two areas, we are realizing benefits already. Over 90 percent of our subscription payments are being updated automatically through EDI. This operation alone, saves several weeks of staff time that was previously devoted to routine maintenance such as posting invoices. On a daily basis, one hour is being saved in checking and mailing monographic orders. The time saved in these two areas can be redirected into other more creative tasks. This provides us with two benefits: staff who are not burned out by repetitious tasks and time to work on other important tasks.

Currently Georgia State is migrating from PALS to Endeavor's Voyager system along with all University System of Georgia libraries in the state. Voyager has EDIFACT EDI processes programmed into the ILS software. This should lead to more seamless EDI processes and reduced annual maintenance costs on our current X12 translation software. As we begin our migration we are communicating with our subscription agents and Endeavor to make sure we include all data elements needed for successful EDI use.

Once our migration is complete, we plan to implement our current EDI processes. After that we will add additional EDI processes as they are available. These processes will include: sending serial and book claims; receiving claims and order acknowledgments and the posting of their responses into our ILS records; and paying invoices electronically through the University's Business Office.

We anticipate with continued EDI development and use in libraries, EDI will continue to revolutionize acquisitions and serials work over the next few years.

## Notes

1. Weigel, Friedemann. 1996. "EDI in the library market: how close are we?" *Library Administration & Management*, 19 (summer): 141.

2. Griffith, Joan C. 1996. "Why not EDI? One librarian's perspective." *Library Administration & Management*, 10 (summer): 148.
3. Compton, Bruce. 1996. "The ILS vendor and EDI: a perspective." *Library Administration & Management*, 10 (summer): 164.
4. Weigel, Friedemann, 145.