Systems Requirements Document

Developed For: Shedrain Corporation
By: dan dougherty
Date: 11/11/1

Executive Summary

Electronic Data Interchange (EDI) is a set of standards that allows companies to exchange basic business documents electronically. Several of Shedrain's largest customers (including Dillards, Fred Meyer, and Dayton Hudson) currently demand that Shedrain be able to process EDI Purchase Orders and send EDI invoices. Shedrain is handling these demands through software on personal computers.

Purchase Orders (P/Os) sent from customers are printed, analyzed and then entered into Shedrain's current accounting system (MCBA) on the HP3000 computer. This is an extremely lengthy process, sometimes taking as much as a week to enter one P/O. This greatly impacts order turn around time.

Invoices produced by MCBA must then be reentered into the EDI system on the personal computer so that they can be electronically transmitted to Shedrain's customers. While not as difficult a process as entering customer orders, this still is a waste of time & resources.

In addition, these same customers are demanding that Shedrain transmit EDI Advance Shipment Notices (ASNs) in the near future. Failure to comply could prove costly. There is no current mechanism to capture this data.

It is recommended that Shedrain further investigate the current and future role of EDI in its business. The interfaces between EDI and MCBA should be automated so that Shedrain may more quickly respond to customer orders. This will not only increase current customer satisfaction, but it will also attract new customers who use EDI.

In addition, revamping the shipping process to capture data required by ASNs is strongly encouraged. Again, this will not only preserve the good will of current customers, but it will attack new business as well.

This report strongly urges further investigation of Shedrain's EDI processing.

Systems Requirements Document

Background Information

Several of Shedrain's largest customers (including Dillards, Fred Meyer, and Dayton Hudson) have chosen to replace paper documents such as Purchase Orders (P/Os) and invoices with Electronic Data Interchange (EDI). EDI is a set of standards that permit electronic transmission of standard business documents. This ensures greater accuracy and also reduces the cost of data entry and supplies. These customers have demanded that their suppliers be able to accept EDI P/Os and produce EDI invoices. Failure to do so can result in fines (as much as $100 per document) and ultimately loss of business.

Shedrain has complied with our customer's demands by purchasing personal computer based software packages to handle EDI. In addition, Shedrain has subscribed to two Value Added Networks (VANs) to facilitate the transfer of information with our clients. (VANs are electronic clearing houses, enabling each client to communicate at a time of its own choosing, instead of having to negotiate a transmission time with each partner. Shedrain currently subscribes to two VANs: ADVANTIS and GEIS.) There is currently a separate EDI program for each VAN.

Shedrain's current accounting system (MCBA) resides on the HP3000 minicomputer. Entering purchase order data from EDI as customer orders in MCBA require a lengthy manual process:

- First, purchase orders must be printed. (This effectively transfers the customer's cost of printing P/Os to Shedrain.)
- Next, the orders must be sorted. EDI orders arrive in item number sequence, with each item specifying the quantity required by each store. But orders in MCBA must be entered in store sequence, with each store specifying the quantity of each item ordered.
- Then, the EDI store numbers must be translated into MCBA customer numbers.
- Finally, the order can be entered.

The paper invoices from MCBA must be entered into the EDI programs. This is a relatively straightforward process, but it is still time consuming. In addition, since there are two different EDI programs, invoice information is sometimes erroneously entered into the wrong program. This causes confusion and delay in invoice transmission to the customer.

In addition, several of Shedrain's customers are now demanding that they implement Advance Shipment Notices (ASNs). ASNs specify shipment details. These documents require that each carton's contents be clearly specified. This is information **not** currently maintained in either an automatic or manual system. Shedrain has several months to comply, but again failure to comply will result in still fines and ultimately loss of business.

Systems Requirements Document

Objectives of the Project

Reduce Order Entry Time

It takes a long time, on some orders as long as a week, to enter a purchase order. This is unacceptable.

When a customer needs an order immediately, there is considerable reshuffling of work, which results in further delays for customers without an immediate deadline. Shedrain occasionally even loses orders because of its inability to enter them in time. As more customers start using EDI, the loss of business will become even more problematic.

When order entry is delayed, factory personnel don't get their picking tickets fast enough to process orders.

Capture Shipping Information

Currently, carton contents are not being saved. As Shedrain's customers demand Advance Shipping Notices, this will become a huge issue.

Eliminate Data Reentry Costs

Some customers (e.g. Dillards) require an entire data entry clerk be dedicated to entering their orders. The cost of printing purchase orders is an unnecessary expense. Invoices for EDI customers are printed, then discarded, wasting expensive invoice forms.

Provide Customer Service

The current system does not permit Shedrain to adequately meet customers' needs. When extreme weather conditions in some part of the country causes an immediate need for umbrellas, some business must be turned away.

Systems Requirements Document

Requirements for New System

Must accommodate EDI requirements of existing customers

Shedrain cannot afford to lose business of its current customers. Currently these involve:

- Receiving Purchase Orders electronically
- Producing electronic Invoices

Accommodate new EDI requirements

Shedrain's largest customers will soon require that Advanced Shipping Notices be produced electronically. These require that the contents of each carton shipped be clearly identified.

Automatically produce these EDI documents

These electronic documents that need to be produced should flow from Shedrain's normal course of doing business. There should be no redundant data entry.

Allow Shedrain to accommodate new EDI customers

It's extremely important that the new system be scalable, that new EDI customers can be added to the system without incurring significantly higher costs

Systems Requirements Document

Alternative solutions

We considered three alternative solutions:

Continue with the Current System

The current system costs Shedrain about $135,000 annually to maintain (See Appendix D: cost / benefit analysis). This $135,000 produces revenue of approximately $2,000,000. The current system doesn't address ASNs and has no way of capturing shipping carton contents. So even if the current system is continued, some new mechanism must be established to capture carton contents.

<more work is needed here>

Outsource EDI

<more work is needed here>

Adapt MCBA to interface directly with MCBA

<more work is needed here>

Systems Requirements Document

Recommended solution

Given the problems discussed above, this report strongly urges that Shedrain further investigate the area of EDI Purchase Orders, Invoices and Advance Shipment Notices. In the first two areas (P/Os and Invoices), the approach seems fairly straightforward: Develop an interface that will replace the current manual one.

In the case of P/Os, we have to remember to mimic not only the manual sorting and collating process, but also the MCBA process that enters that data (allocating inventory, checking credit, etc.) Invoices should be much more straightforward. We do have to learn about the programs that create the EDI data. Here we need to also investigate the possibility of eliminating one of the two EDI programs already in place. If the programs can communicate with either VAN, we could eliminate one, thus making the interface task much simpler.

We know a new system to capture data for the ASNs is necessary. It is not, however, entirely clear whether this system should be an additional module of MCBA or a P/C based front end to the current EDI programs. Once again, eliminating one of the two EDI programs will make the task easier. Another question that needs to be answered is whether the module should be purchased or custom programmed. Also, the issue of bar code technology (both to produce labels and to capture UPC data) needs to be explored.

It is recommended that this project be implemented in stages:

- **Create the P/O to MCBA interface.**
  This would have the most immediate effect on operations and customer relations.
- **Create the MCBA invoices to EDI interface**.
  This could be done relatively quickly, and would make transition to the last stage easier.
- **Create the new shipping system.**
  This will be a rather extensive project that will involve not only a new information system, but a major redesign of the shipping process.

Systems Requirements Document

Appendix A: Data Flow Diagrams

<more work is needed here>

Appendix B: Class Diagrams

<more work is needed here>

Appendix C: Use Case Diagrams

<more work is needed here>

Systems Requirements Document

Appendix D: Cost / Benefit Analysis

Costs

Development

Personnel

	Hours	Hourly Rate	Total Cost
Analysts	600	$100	$60,000
Programmers	1000	$50	$50,000

New Hardware

	Number	Unit Cost	Total Cost
Bar Code Printers	4	$3,000	$12,000
Bar Code Scanners	4	$1,000	$4,000

Total Development Costs $126,000

Projected Annual Operating Costs

Personnel

	Hours	Hourly Rate	Total Cost
Analysts	40	$100	$4,000
Programmers	100	$50	$5,000

Maintenance

	Number	Unit Cost	Total Cost
Bar Code Printers	4	$600	$2,400
Bar Code Scanners	4	$200	$800

Supplies

	Estimate Annual Cost
Bar Code Labels	$5,000

Total Operating Costs $17,200

Systems Requirements Document

Appendix D: Cost / Benefit Analysis

Benefits

Personnel Cost Saved

Customer Order Processing Data Entry[1]	$100,000
Invoice Data Entry[2]	$ 25,000
Manual Calculation of Manifests & Packing Lists[3]	$ 10,400

	$135,400

Customer Good Will

Currently, customers using EDI represent an annual volume of business of $2,000,000. The inability of the current system to process orders in a timely fashion would jeopardize some of that business.[4]

In addition, more and more customers are requesting EDI capability. Shedrain's leading salesperson estimates $2,000,000 of new business if Shedrain had functional EDI capability.[5]

Potential Additional Savings

Failure to comply with ASN requests could result in up to $50,000 in penalties.[6]

Reducing VAN costs could save up to $10,000[7]

Systems Requirements Document

Formulas to Determine Benefits on Prior Page

1. # employees entering EDI P/Os * average annual salary of those employees:
   4 * $25,000 = $100,000

2. # employees entering EDI invoices * average annual salary of those employees
   1 * $25,000 = $25,000

3. Weekly hrs spent producing documents * 52 * average hourly pay rate of ship line employees
   20 * 52 * $10 = $10,400

4. Total Business last year to Dillards, Fred Meyer, and Dayton Hudson

5. Estimate from Jeff Triblett

6. Average # annual shipment to ASN customers * average shipment penalty
   1,000 * $50 = $50,000

7. Annual cost of both VANs = $10,000