

# Managing the Hidden Costs of Electronic Commerce

Leveraging EDI Investments



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## **Leveraging EDI Investments**

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Part 1:

**Introduction:  
Users Do Not Have a Handle on E-Commerce Costs**

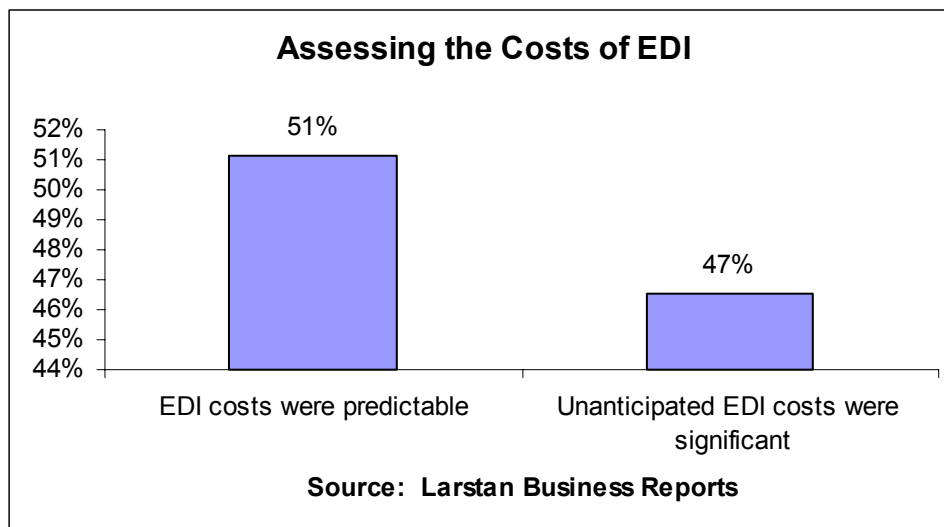
For many companies that have implemented Electronic Data Interchange (EDI) over the past 5 years, the costs associated with implementation are something of a mystery. In a survey commissioned by EXTOL International Inc., and conducted by Larstan Business Reports, only half of respondents (51 percent) reported that their implementation costs were easily predictable. One hundred and seventeen (117) EDI implementers who deployed new systems within the past 5 years were surveyed.

For a full 47 percent of respondents, creating a business plan and budget for EDI proved elusive at best, because of the high number – and value – of unanticipated costs that arose during the implementation process. This was particularly true for companies looking to integrate data from trading partners into the work, data, and cash-flows of their business operations.

**The implications of these findings are pointed. Without a firm understanding of the full spectrum of EDI deployment and management costs, many companies are missing critical information in their decision-making processes. In so doing, they are putting their B2B e-commerce initiatives at risk of failure.**

*“Most people who are confronted with deploying EDI quickly, do so because they are responding to an ultimatum from a large trading partner to do business electronically. At that point, the implementer has a pretty short list of costs:*

- *the price of the translation and mapping software;*
- *the value-added network cost of sending information between trading partners; and*
- *the set up time associated with both.” – Tony Baran, President of Extol*



The situation is far more complicated for companies who do not want to implement “rip and read” EDI, in which incoming transaction sets are printed out and then keyed manually into enterprise applications. However, even this no-frills approach to electronic commerce can give rise to un-anticipated expenses.

Consequently, for the purposes of this White Paper, a distinction is drawn between:

- Tactical EDI implementations that fit into the “rip and read” model just described; and
- Strategic EDI implementations in which data from trading partners are integrated as seamlessly as possible into enterprise systems like inventory management, accounts payable (or receivable), logistics management, etc.

To that end, this report focuses on the major cost elements associated with strategic EDI implementations, with a goal of providing readers a framework against which they can establish budgets and manage cost-efficient deployments. Among those companies that implemented strategic EDI, seven (7) major cost elements were identified as areas that consistently emerged to exceed budgeted expectations during the implementation process.

- 58 percent of respondents reported that the cost of EDI “communications”—the ability to send and/or receive EDI messages via Value Added Networks, Direct Connections, FTP or the Internet—was higher than expected.
- 56 percent reported that the cost of EDI “operational integration”—the ability to integrate EDI traffic into the automated work flow systems in a multi-platform environment—was higher than expected.
- 51 percent said the cost of EDI “transformation”—the ability to manage multiple standards and formats of EDI messages—was higher than expected.
- 44 percent indicated that the cost of EDI “data integration”—the ability to integrate data into enterprise systems and applications—was higher than expected.
- 37 percent reported that the cost of EDI “content management”—the ability to route and process EDI data appropriately according to business rules—was higher than expected.
- 25 percent said the cost of EDI “auditing and reporting”—the ability to determine with legal certainty who sent and/or received a message at a specific point in time—was higher than expected.
- 23 percent indicated that the cost of EDI “user interfaces”—the ability to provide different users who interact with e-commerce systems with appropriate access—was higher than expected.

In the pages that follow, we explore the cost and operational imperatives associated with each of these issues.

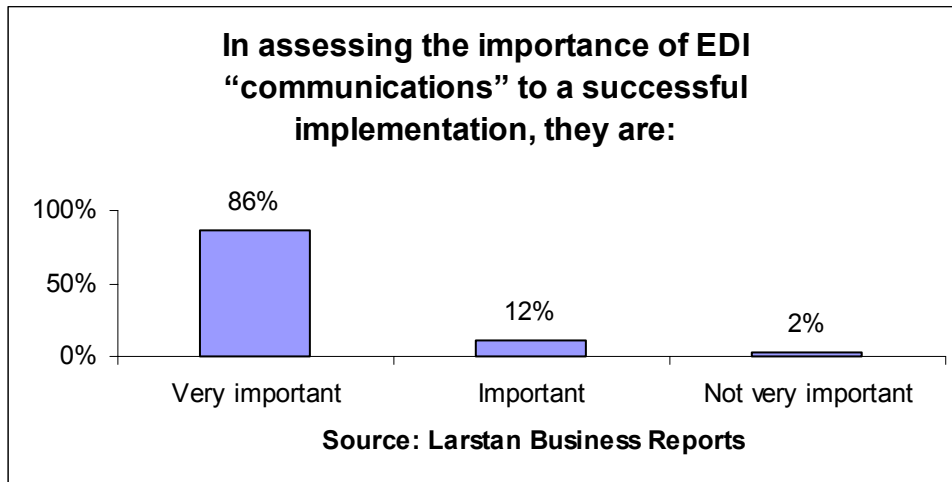
**Part 2.**

**Operational Impact Analysis**

Regardless of how companies are introduced to EDI – whether by the stick of a large customer who is demanding digital connectivity for transaction processing, or because executives see operational opportunities to streamline processes and be more responsive to market developments – successful implementations will largely be defined by how effectively they manage the critical, and sometimes hidden, cost elements of the initiative. In this report we explore seven critical cost elements and put them into an operational context.

**...EDI Communications**

The commercialization of the Internet and the maturation of technologies (such as virtual private network and encryption) which make it viable to send mission-critical/sensitive information over the net, has introduced extremely dramatic opportunities to reduce one of the largest cost elements of an EDI implementation.



Until fairly recently, the communications costs of an EDI relationship between two trading partners were driven by which value-added network (VAN) the hub partner (typically the more influential company in the relationship) selected as the inter-corporate pipeline of choice. The less influential members of the relationship had the following choices:

- Open an account with that VAN;
- Establish a relationship with an organization that had an interconnection agreement with the VAN in question;
- Establish a direct connection with the trading partner (if the partner allowed this);
- Send FTP files of EDI transactions, (if the partner was willing to accept them).

The first two options have by far been the most common. And if a company was on the less influential side of more than one relationship, then multiple VAN accounts were often in order, unless the company could find a third party network that had well-negotiated interconnection agreements with the necessary VANs.

The Internet has long offered the promise of less expensive and more flexible interconnection options, and it looks as if companies are starting to use the Internet to cut their EDI networking costs.

However, even with the adoption of the Internet as a primary channel for EDI data flows, companies will have to take into account additional investments to address:

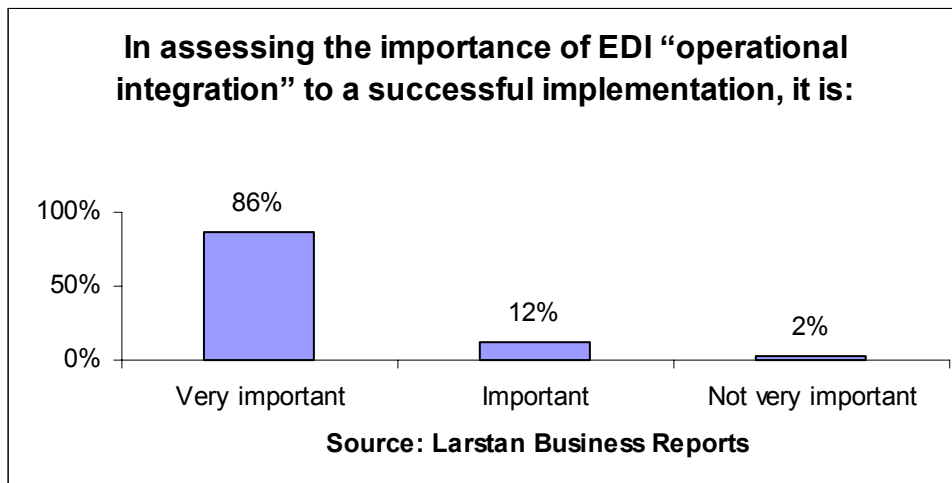
- Security
- Encryption
- Certificates; and
- non-repudiation.

Moreover, it will be up to the influential “hub” trading partners to allow this channel of communication to exist as an option. Many hubs are moving in this direction, however, so it is increasingly important for companies implementing EDI to plan for Internet connectivity and establish relationships with technology partners that have access to high-quality, broadband Internet backbone resources.

By using the Internet to pass the data through corporate portals, companies may be able to reduce from 50 to 80 percent in their network charges.

### **...Operational Integration**

A full 86 percent of respondents surveyed for this report stated that “operational integration”—the ability to integrate EDI traffic into the automated work flow systems in a multi-platform environment—was very important to a successful implementation.



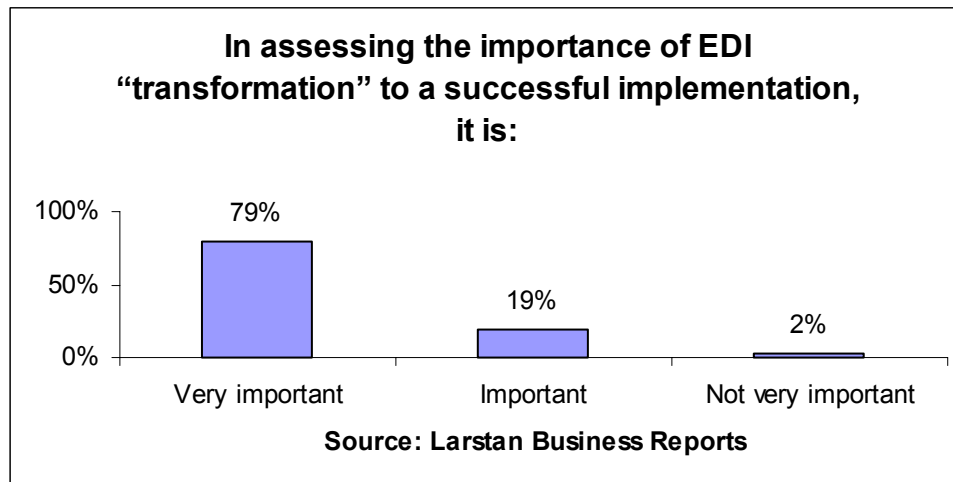
The key to managing costs of this element revolves around the elegance and simplicity of how functions are automated before and after the EDI transaction takes place. It is critical that companies establish business rules which take advantage of the new work-flow dynamics that may exist in the wake of an EDI implementation. Thus, success in managing operational integration is as much a function of implementing effective business processes as it is about implementing effective technologies. It is important, therefore, to have extremely strong lines of communications between the business managers and the technologists, and that the technologists are able to bring to life the operational efficiencies envisioned by the new business process in a completely automated manner.

### ...Data Transformation

An EDI pundit once said that “the nice thing about EDI standards is that there are so many of them.” It is true that leading companies in North America and Europe have spent almost half a century sending extremely bright people to standards meetings in the hopes of producing a single global electronic language for processing commercial transactions. The efforts have produced many contributions to advance the cause of machine-to-machine data exchanges. But they have not produced a single global standard – or a completely dominant national one for that matter.

As a result, companies must deal with many different flavors business-to-business electronic commerce standards and formats, including:

- North American EDI (different versions of the ANSI X12 standards, plus the industry specific guidelines for different sectors of the economy);
- International EDI standards (Edifact), which wrestles with many of the same issues above, plus addresses issues like harmonizing different government rules and regulations that govern international trade;
- Old fashioned proprietary formats that are alive and well in some vertical industries;
- The rise of new eXtensible Markup Language schemas that initially promised to put EDI into the ash can of history, but which, it turns out, will coexist with EDI for the foreseeable future.



This mix of standards explains why “data transformation” – the ability to manage multiple standards and formats of messages – is considered by 79 percent of survey respondents to be “very important” to the success of EDI implementations.

The EDI systems and strategies selected by users must be able to handle data transformation as effectively as possible and in “real time.” This is because enterprise systems into which EDI data is being fed, are increasingly dependent on having instant access to data to provide decision makers with the information necessary to effectively

drive the ship of commerce. If the data transformation process introduces latency or lag-time into the process, the financial and opportunity costs to strategic implementers can be very high.

### **...Data Integration/Mapping**

The ability to integrate data into enterprise systems and applications is the cornerstone of a strategic EDI implementation. The EDI industry has evolved substantially with regards to this issue, creating new critical elements to look for in translation and mapping solutions.

Early generation mapping and integration tools were static applications in which translation software was manually programmed to correlate data types within incoming transaction sets with corresponding fields in the target database of the users' enterprise system, and vice versa. While this solution worked well in environments where standards did not change and all trading partners used the same version of the standards all the time, it is less practical in the more typical situations in which trading partners and even standards change at an unpredictable pace.

Currently available data integration and mapping tools from leading providers in the market are dynamic in nature, and proactive in their ability to process transaction sets. In other words, the mapping application itself uses the presence of data to build a map; analyzing data in the envelope of an EDI transaction to automatically route data to its appropriate destination within an enterprise system.

This advanced and automated approach to data integration and mapping has a dramatic impact on the EDI process. The manual process of building a map can take 8 hours to set up a trading partner; mainframe shops could take up to two weeks and some NT networks were taking even longer. Using the new approach, the process on a dynamic basis can reduce integration maneuvers down to minutes without human intervention.

A conservative Gartner analysis indicates that the amount of money and time spent in traditional manual mapping/integration activities is twice that of advanced automated integration techniques.

### **...Content Management**

A full 70 percent of survey respondents ranked EDI "content management" as "very important to successful EDI implementations. Content management refers to the ability to route and process EDI data appropriately according to business rules.

When companies integrate disparate systems, new interfaces are created to let the "mapping process" take place. The process can be automated for each interface. But it is a truism in the EDI industry that fewer system interfaces required to get data to and from different parts of the enterprise system typically translates into higher-performance and reliability.

The goal, then, is to eliminate unnecessary interfaces, because fewer moving parts reduce the complexity of managing and maintaining the system. Content management introduces intelligence into the integration environment by reducing the need for interfaces. This is done by applying business logic to determine where data should go based on the situation and context of the data. Content-based routing is a relatively

large organization offers a good opportunity to illustrate the capabilities of effective content management.

**Situation:** A large hub trading partner has a centralized EDI system that deals with trading partners across the country in facilities throughout the country.

**Challenge:** How can the company parse, separate and appropriately route incoming EDI traffic from trading partners that deal with multiple parts of the enterprise and are authorized by different decision makers within the company, without setting up discrete integration interfaces for each business relationship?

**Solution:** By using the principles of content management within the EDI translation infrastructure, "content aware" software can search for matching characteristics located in different parts of the enterprise system to automatically fill in information gaps and route data to appropriate databases.

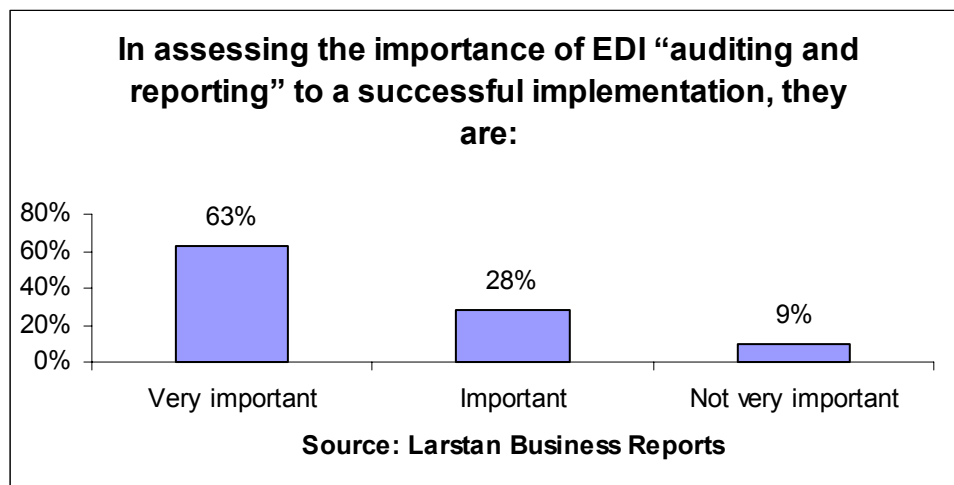
Effectively deployed, this technological innovation will save companies hundreds, perhaps thousands, of hours in custom programming time among companies who have made a commitment to strategic EDI.

### **...Audit/Reporting**

Few areas of corporate activity are monitored more closely than the invoices, purchase orders and related transactional exchanges between trading partners.

Thus it was not surprising to see that audit and reporting functionality ranked high in importance to EDI professionals.

The bottom line is that the audit trail of all EDI transactions must be non-repudiable and un-contestable. As much progress as has been made in moving toward electronic commerce over the past few years, users still must make certain that electronic transactions are more secure, tamper proof and independently verifiable than manual paper-based transactions.



The goal of solid audit and reporting functionality is two-fold:

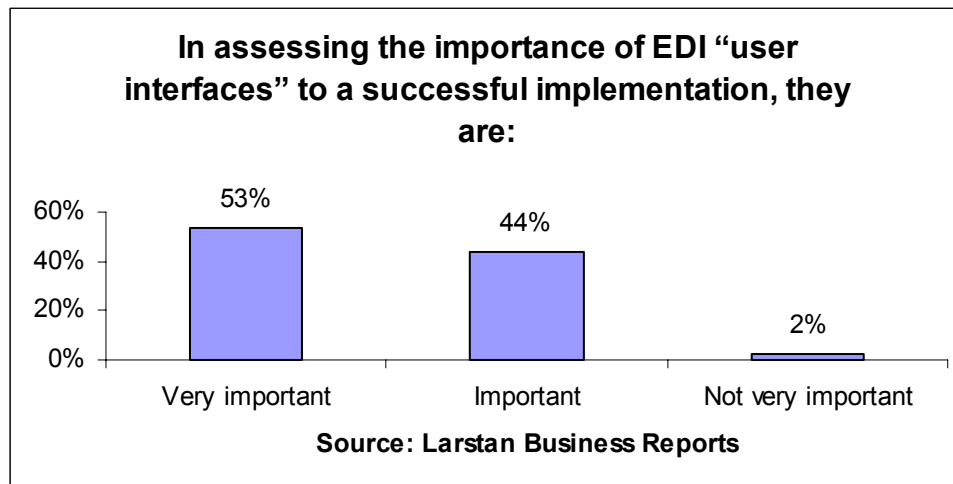
- to survive internal and external audits without prejudice; and
- to establish the fundamental foundation of trust and confidence in the system.

Decisions about audit reports generated by and from the system have both tactical and strategic implications. From a tactical standpoint, the audit trail provides the platform through which issues, discrepancies and/or disputes can be rapidly resolved. From a strategic standpoint, it provides critical stakeholders – including shareholders, directors, executives and managers – with a clear view of corporate operations.

### **...User Interface/Access**

This final element is perhaps the most counter-intuitive one. EDI came into being with the promise to remove human intervention from routine business processes. For years, the goal was to let the machines take over all routine transaction processing activities.

That attitude has changed significantly with the advent of integrated enterprise management suites, like Supply Chain Management, Customer Relationship Management, and Knowledge Management.



It is now increasingly recognized that collected transactional data can provide valuable insights into corporate dynamics, consumer behavior, market trends and even product life cycles. And with the new corporate focus on doing everything in real-time, having access to EDI data on a “snap shot” basis is no longer good enough; different kinds of users now must have instant and immediate access to the EDI information as it is processed.

Consequently, next-generation strategic EDI implementations must take pains to ensure that all data is available as it is collected, exchanged and processed to users in ways that are sensitive and meaningful to the functions they perform – whether those functions are strategic (to support important decision-making processes) or tactical (to quickly resolve day-to-day issues with trading partners).

### **...Conclusion**

Electronic commerce and EDI in particular, can contribute significantly to the efficient and cost-effective accomplishment corporate objectives, including:

- Accelerating the transaction processing cycle – by eliminating mail/fax delays, removing manual data entry to improve data integrity and accuracy;
- Reducing operational costs – by automating the document editing/checking process and mapping incoming transactional documents to enterprise systems with little or no human intervention;
- Improve the effectiveness of tactical and strategic planning – by providing a clear and real-time window into supply-chain activities;
- Better and more meaningful relationships with trading partners – by enhancing enhances inter-company information sharing & cross functional teams; and
- Many other strategic and tactical opportunities.

However, most of these benefits can only be achieved by implementing EDI in a strategic manner that addresses the seven critical implementation points:

- EDI Communications
- Operational Integration
- Data Transformation
- Data Integration/Mapping
- Content Management
- Audit/Reporting
- User Interface/Access

Each point carries cost and operational issues that must be considered on the front-end of any EDI implementation initiative. A lack of understanding about how each of these issues contributes to the implementation can undermine an implementation and delay return on e-commerce investments.

It is critical, therefore, to identify solutions and establish relationships with technology partners who understand these issues and have strategies for dealing with all of them in an integrated manner.

**Part 3.**

**Wise Foods:  
Strategic Migration from Legacy Environment  
Leads to E-Commerce Breakthrough**

For many companies, the challenge of implementing and managing business-to-business e-commerce relationships is not new at all. But executives in these organizations often face subtle and complicated challenges as they take technologies like EDI to the next level. The reason: entrenched and established technologies, business procedures and relationships must be scrutinized and changed, creating discomfort and even resistance if the process is not properly managed.

But change is inevitable in the world of electronic commerce because:

- Business strategies often evolve to respond to new marketplace realities; and
- New technological developments create opportunities to introduce operational efficiencies that have strategic implications.

That was the situation facing Neil Bixler, Director of MIS at Wise Foods Inc., as he evaluated his e-business infrastructure options.

**...Legacy Systems a Byproduct of M&A Activity**

Founded in 1921, Wise Foods is now the largest regional snack food company in the United States, manufacturing and distributing its products – like Wise Potato Chips, Cheez Doodles, Cottage Fries, New York Deli, Waffies and Krunchers – primarily on the east coast. (The company continues to expand West beyond Ohio, and has a growing presence in Alabama, Texas, and other western states.)

Since its inception, the company has been through a number of mergers and acquisition (Borden in 1964, KKR in 1995 and Palladium Equity Partners in 2000). While the Wise brand and culture has remained largely intact throughout this period, each change of ownership brought with it operational and management implications, as different parts of the company were kept or released based on the specific interests of the parent corporation.

Wise, itself, began taking business advantage of electronic commerce in the 1970s when it established peer-to-peer data exchanges with major customers using magnetic tapes. In the early 1980s, Borden implemented standards-based EDI technology with large retailers, which created the opportunity for Wise to gain economies of scale benefits by consolidating its billing processes with sister Borden companies.

As a result of this initiative, Borden created an in-house service organization called Resource Partners to support the EDI needs of all Borden companies, including Wise.

But during the KKR divestiture of the Borden companies (which eventually saw Wise land with Palladium Equity Partners in 2000) Resource Partner was sold to another company to become an entity separate and distinct from Wise. With its former “in-house” resource now an outside vendor, Wise found itself forced to pay what an analysis showed to be exorbitant costs for EDI.. Service levels were poor and that had a direct impact on Wise’s ability to conduct business.

*“Whenever we wanted to add a new partner it was a slow, painful thing. If we wanted to create a new transaction or add a new transaction it was very painful and costly. Moreover, it was clear that we now had an added point of failure because there were software, systems and, communications issues we could not control or manage.” – Neil Bixler, Director of MIS, Wise Foods, Inc.*

This was especially true since Wise had replaced its legacy systems with new AS/400 platforms running JD Edwards Enterprise Resource Planning (ERP) applications. A business case to bring EDI capabilities into the Wise MIS operation was thus formed.

However, a major challenge lay ahead: convincing key internal audiences – including the interim management team and some members of the board of directors – that the business case was strong enough to justify making significant changes on how Wise processed tens of millions of dollars worth of electronic

Bixler and his team put together an analysis of the issues associated with moving EDI capabilities in house, and were able to support the conclusion that the company would save a minimum of \$100,000 per year by implementing an appropriate solution.

### **...Characteristics of the Solution**

The first point of consideration for Wise was to find solutions that operated in the AS/400 environment. While there were many PC EDI applications on the market that claimed to support the mid-range platform, Bixler wanted a native AS/400 solution.

*“I’ve always felt that the closer you are to the source of the data, the less points of failure you’re going to have. As I looked at the market for EDI translators and mappers, I felt that the PC-based products were not secure or stable enough to handle the type of volume we were doing. I mean, we were billing between \$50 and \$60 million via EDI at that time. I had already made a commitment to the AS/400 platform because I concluded it is one of the most stable boxes out there.” – Wise Foods’ Bixler*

The company was closely courted by two EDI software vendors who offered EDI mapping and translation products for the AS/400 platform. After a vigorous technical review and business proposal process, EXTOL International, Inc., emerged as the provider of choice for Wise Foods.

The implementation proved successful. EXTOL implemented the mapping and translation applications, and assisted Wise Foods in establishing the internal infrastructure that managed the transition from Resource Partner to internal processes in a seamless manner that was transparent to trading partners.

*“As a result, today we have four times the trading partners and have expanded EDI transaction for orders and invoices to inventory movement, vendor managed inventory, remittances and price confirmation. As an added plus, Extol assisted us in avoiding even more costs by transitioning from our previous proprietary value-added network (VAN) to EXTOL’s Portal using TCP/IP technology. Furthermore, Extol helped us link up with Cyclone to begin secure transport of EDI data over the Internet.” – Wise Foods’ Bixler*

**...The Bottom Line**

As a result of this strategic migration, Wise Foods has expanded its trading partner base, improved the efficiency of the entire supply chain, accelerated cash flow and decreased the costs of EDI services by nearly \$100K per year.

Moreover, the EXTOL-based EDI implementation has allowed Wise Foods to engage in price synchronization initiatives (using a service called viaLink).

*“We now synchronize pricing with two major retailers (Nice N Easy and Winn-Dixie) and are currently in negotiation with Kmart. And, our Extol mapper allowed us to become the first of 50 companies to register our items through UCCnet to Wal-Mart...this too we will expand to Food Lion, Ahold, Shaw’s and many more as they subscribe to UCCnet.” – **Wise Foods’ Bixler***

**Part 4.**

**BIC Graphic USA:  
Order Processing Maximized with EDI User Interface**

Electronic Data Interchange (EDI) is considered a godsend by organizations looking to tame immense routine intercorporate operations with trading partners. But what happens when there is no routine to the routine?

That was the dilemma faced by BIC Graphic USA, a division of BIC USA Inc., who provides custom-imprinted writing instruments and complementary offerings for the promotional products industry. BIC Graphic USA sells exclusively through distributors of promotional products and advertising specialties.

Established in 1969 under the name BIC Special Markets Division, BIC Graphic USA offers a wide variety of high quality, innovative offerings of promotional products of BIC and Sheaffer name brands.

The company has over 13,000 distributors—the vast majority of which are relatively small companies that offer advertising promotions products to a variety of businesses. The small size of most trading partners, combined with the highly specific and customized nature of the orders placed with BIC Graphic, created a poor environment in which to implement EDI. The reasons:

- Most of the trading partners had not automated (and still have not today) their business processes to support electronic trading. In fact, only 20 of BIC Graphic's largest trading partners are in a technical position to do EDI; and
- The high degree of customization associated with each order, such as details about graphics and logos, is not effectively supported by standard transaction sets. There is an infinite number of color combinations for any given specialty order, complicated by descriptions and locations for special graphics and logos. Consequently, there can be substantial human involvement with every order, if only to review and confirm that everything associated with the order is correct.

To streamline the process, in 1991 the company built an imaging system that presents orders to order entry on a split screen.

*“One side of the screen is a document that presents all of the fields needed by BIC Graphic to process an incoming order. The other side offers an image of the actual order sent to us by a distributor—which could have arrived via fax, email, or through the post office. Order entry's job is to make sure we get all the information we need and properly recorded in our order entry system.” – Gary Savatakis, BIC Graphic USA.*

According to Savatakis, the average order size is under \$500. The company processes a variety of transactions—approximately 650,000 per year.

Nevertheless, BIC Graphic saw an opportunity to implement EDI in a surgical manner to reduce the cost of their transaction process. Critical to any implementation, however, was having a system in place that could provide effective user interfaces with order entry personnel and managers who deal with trading partners every day.

*“We recognized that we were not going to be able to implement a traditional B2B E-commerce system with our customers. We felt that if we could get our top customers, who are each responsible for large volumes of orders per year, to communicate with us electronically, then we could substantially reduce the time our staff spent reconciling and processing orders. We were looking for a way to get a higher percentage of the data that we needed to process each order in a more accurate manner.” – BIC Graphic’s Savatakis.*

The parent company, BIC USA Inc., had substantial experience implementing strategic EDI in other lines of business. EDI was used by BIC Graphic to process financial transactions for lockbox and reconciliation services with its bank using the Bank Administration Institute (BAI) standard. BIC Graphic also used EDI with logistics partners like Federal Express, RPS, and UPS to further improve efficiencies.

The company selected EDI Integrator from EXTOL International to rapidly deploy an EDI initiative with its 20 largest distributors. The implementation was designed to support the current work flow, while removing as many unnecessary steps to process orders as possible.

*“Now, we check our EDI mailboxes to pick up whatever orders are out there. Then, we bring in that EDI PO to our order processing system. Our EDI software allows us to automatically create an image of the order that matches our existing order forms and entry screens. This bypasses several steps associated with scanning and indexing the order and has the additional benefit of presenting much more accurate data to the reviewing order entry person. While the order still has to be reviewed, and there will often be information that must be researched and entered into an order, most of the data received is programmatically populated into our database. We estimate that 50 percent of the work in terms of order entry has already been accomplished by receiving the order through our EDI system and integrating it into our existing order management process.” – BIC Graphic’s Savatakis.*

The company is now processing 10 percent of its total transaction volume in this manner and is working with additional large trading partners to expand the EDI program further. Operational efficiencies gained from the initiative so far provided a 100 percent return on investment within the first 12 months of implementation, according to BIC Graphic officials.

Looking forward, the company is investigating new integration technologies available in the soon to be released EXTOL Business Integrator. BIC Graphic wants to automate interactions with smaller trading partners that use small business accounting and office management application suites like QuickBooks. Plans are in the works to provide easy-to-implement interfaces that can translate files from these software programs, regardless of platform, into EDI formats in order to bring additional efficiencies to the order processing functions. BIC Graphic also plans to use the EXTOL Business Integrator software to support standards and communications methodologies designed and developed by ePromoStandards Alliance (ePSA). ePSA is a not-for-profit organization that was initiated to develop and create eCommerce standards for a B2B solution to accommodate and satisfy the needs of the Specialty Advertising Industry.

*“We are going to be a beta site for EXTOL’s new product, the EXTOL Business Integrator (EBI), which is an electronic business integration package. This will*

*enable us to do a lot more point-to-point transactions with smaller distributors. We plan on having the capability of handling proprietary formats as well as adhering to ePSA standards. We were going in that direction before we knew anything about EXTOL's initiative. We learned about it at a user group conference and decided that EBI could be the solution for us to resolve our future EDI and eCommerce initiatives." – BIC Graphic's Savatakis.*