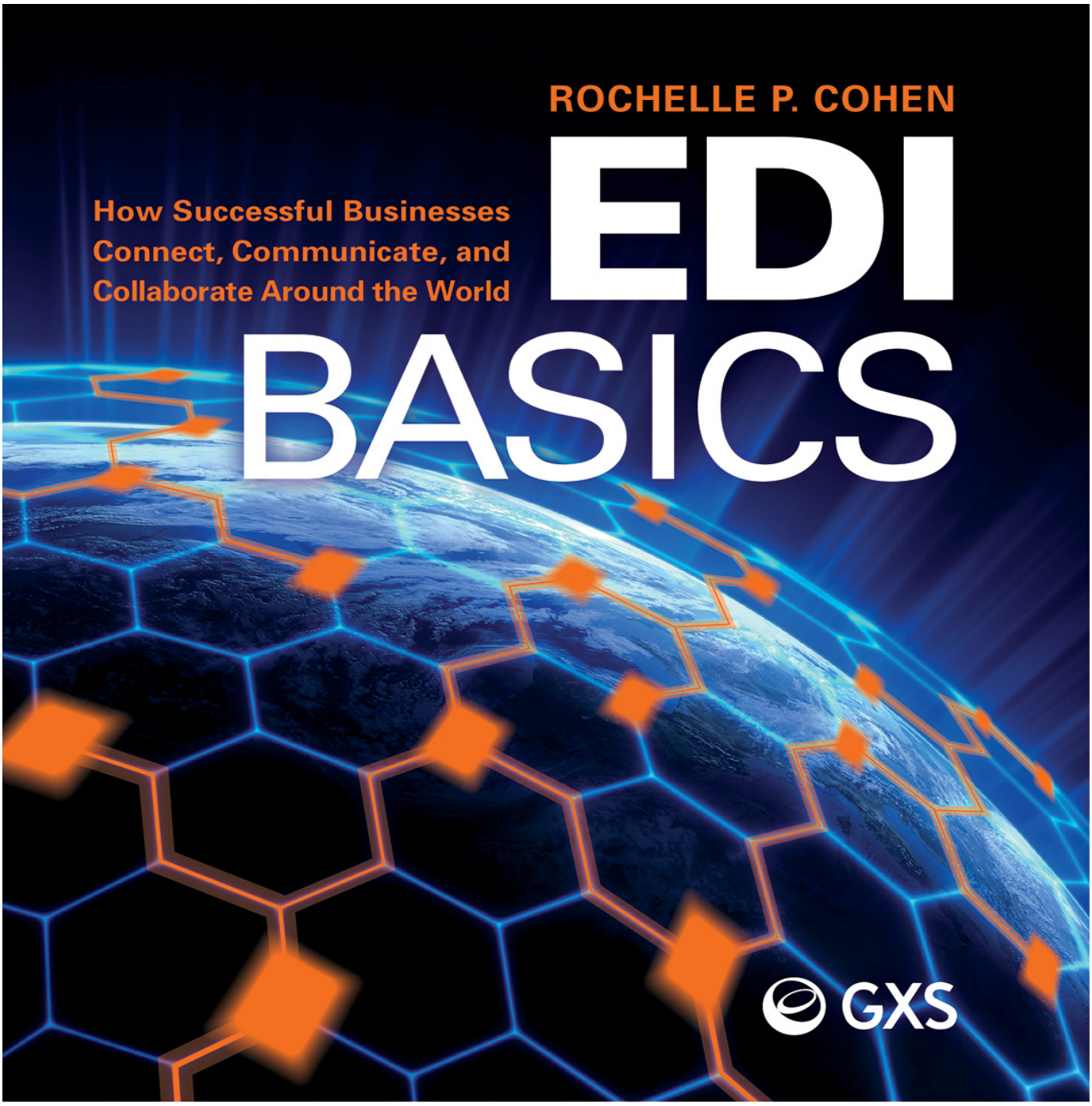

ROCHELLE P. COHEN
EDI
BASICS
How Successful Businesses
Connect, Communicate, and
Collaborate Around the World
GXS

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EDI Basics

How Successful Businesses Connect, Communicate, and Collaborate Around the World

by

Rochelle P. Cohen



2013

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FOREWORD

BILL CLINTON once observed, "The price of doing the same old thing is far higher than the price of change." Companies that are slow to adapt new technology to their business processes may find themselves consigned to the proverbial dustbin of history.

Businesses have invested in technology such as Enterprise Resource Planning (ERP) systems to automate internal business processes, including accounts payable and receivable, inventory control, and intra-company communication. However, many of these same companies are slow to automate their business-to-business transactions, such as the exchange of purchase orders, invoices, and bills of lading.

Electronic commerce (e-commerce) is the exchange of information via electronic media such as the Internet and private communications networks. There are two types of e-commerce: Business-to-Business (B2B) and Business-to-Consumer (B2C). Almost every day, each of us experiences B2C e-commerce, such as when we book airline tickets or hotel reservations online and then receive an electronic confirmation. This book focuses on electronic

data interchange (EDI), the most commonly used B2B e-commerce technology.

In today's business environment, EDI remains a game-changer across all industries, including retail, banking, manufacturing, high-tech, and services. For many companies it has become the lifeblood of their business, making them more efficient, driving down costs, and increasing customer satisfaction. It is the means by which they can differentiate themselves from their competition. Using EDI, a manufacturer in Detroit, Michigan can send a purchase order to its supplier in Japan, receive an electronic document indicating that the item is out-of-stock, and immediately react by sending the purchase order to an alternative supplier in Brazil—all in just minutes. This high level of visibility that is enabled by the use of EDI is critical to business success.

EDI Basics introduces you to this electronic way of doing business so that you can participate knowledgeably in the conversation at your company about moving away from the old, manual processes.

The pages that follow answer the questions: What is EDI? How does it work? What does it take for your company to get started?

* 1 * 1 * 1 *

WHAT IS EDI?

In this chapter, you will learn:

- ☞ *The definition of EDI*
- ☞ *How the EDI process works for sending and receiving documents*
- ☞ *The benefits of EDI*

ELECTRONIC COMMUNICATION has changed the way companies conduct business with each other. Business-to-business (B2B) electronic commerce (e-commerce), which includes EDI, XML (Extensible Markup Language), and online catalogues, has enabled the integration of companies throughout the world into communities of business partners (often called trading partners) with benefits for all. In today's business environment, B2B integration is a key to success; in fact, many companies will no longer do business with you if you can't do business electronically.

While many businesses have incorporated emails and faxes into their B2B communication, these processes still involve human handling and are thus slow and prone to error. Although they provide improvements over postal mail-based processes, they lack the power and functionality of e-commerce.

Figure 1.1 shows a simplified scenario in which a buyer faxes or mails an order to a supplier, who then faxes or mails an invoice back to the buyer.

Manual, paper-based processes are slow, error-prone, and costly.

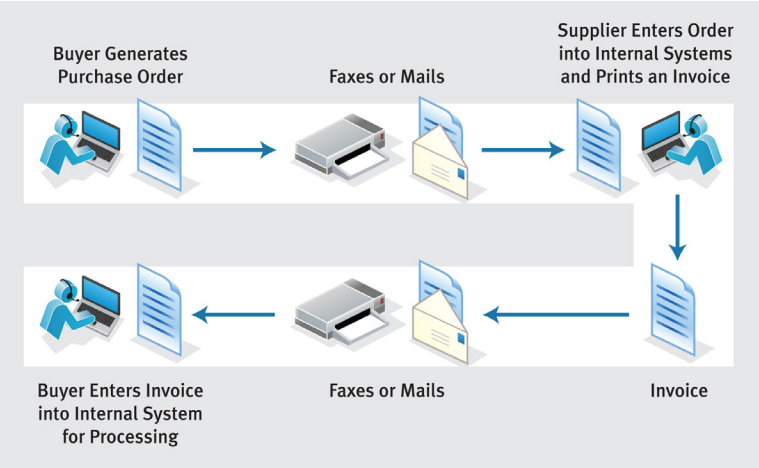


Figure 1.1: Manual Document Exchange

As you can see, this manual process involves a lot of paper, people, and time. Mail can be slow and paper documents can be misplaced or lost. Once received, mailed and faxed documents must be manually entered into a computer application, a process that frequently results in errors. And even though an email is sent electronically, it too must be entered manually, because the computer application has no way of knowing where each piece of data needed is located within the email. Having people

involved slows down the processing of the documents and also introduces errors.

In the 1960s, the railroad industry, which needed to find a faster and more efficient way to communicate information about goods being transported, began to send this data electronically. Other businesses realized the value of electronically exchanging information and so, beginning in the 1980s, many industries adopted EDI, the electronic exchange of standard-formatted business documents between computers. At first, only those businesses that could afford large mainframe computers were able to participate. But with the advent of the personal computer and then the availability of the Internet, use of EDI became available to all companies regardless of size.

Electronic Data Interchange (EDI) is the computer-to-computer exchange of business documents, such as purchase orders and invoices, in a standard electronic format between business partners, such as retailers and their suppliers, banks and their corporate clients, or car-makers and their parts suppliers.

Electronic Data Interchange (EDI) is the computer-to-computer exchange of business documents, such as purchase orders and invoices, in a standard electronic format between business partners.

The most common documents exchanged via EDI are purchase orders, invoices, and advance ship notices. But there are many others, such as bills of lading, customs documents, inventory documents, shipping-status documents, and payment documents.

Because EDI documents are processed by computers, the computer's program must know where to find each piece of information in the incoming document and the

format of that data. For example, are the numbers included in the data integer (e.g., 12) or decimal (e.g., 12.0)? Are the dates in the form mmddyy or mmddyyyy? Just as two speakers of different languages (for example, one who speaks only English and one who speaks only Japanese) cannot hold a conversation, two business systems, each with its own proprietary format rather than a common format, cannot exchange data with each other. Thus, a common, standard format is the language by which businesses communicate with each other via their computers.

EDI standards provide a common data format, enabling computers to communicate.

EDI standards have been developed by organizations of concerned businesses to identify needs, create plans to meet those needs, and come to an agreement on the proposed standards. Subcommittees continually meet to propose new standards or changes in response to evolving business requirements. There are several EDI standards in use today. The most common cross-industry standards are ANSI, primarily used in the United States, and EDIFACT, primarily used in Europe and Asia. In addition, there are standards for specific industries, such as SWIFT for banking and RosettaNet for high-tech.

There are several EDI standards in use today along with standards for specific industries. See Chapter 2 for further details.

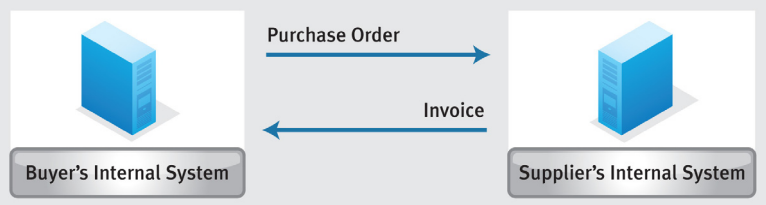
Let's now look at how the EDI process works.

The EDI Process

Today, all types of business documents for industries such as retail, automotive, high tech, logistics, and banking can be exchanged using EDI. These documents can flow from

the sender's computer straight through to the appropriate application on the receiver's computer (e.g., the order management system), where processing can begin immediately.

With a fully integrated EDI system, the process can look like this—no paper, no people, and almost no time:



EDI document exchange is from computer to computer—no people or paperwork involved.

Figure 1.2: EDI Document Exchange

As you can see from Figure 1.2, sending and receiving EDI documents can be a seamless and efficient way to conduct business.

Sending EDI Documents

To send an EDI document, you need to identify the data, create an EDI document, and transmit it.

Step 1: Identify the data

The first step is to identify the data you want to include in the purchase order, invoice, advance ship notice, etc. The sources of data and the methods available to generate

To send an EDI document:

- Identify the data to be sent;
- Convert data into EDI format using translation software;
- Transmit the EDI document to your business partner.

the electronic document can include: (1) computer programs that extract data from system databases, such as from a retailer's purchasing system or a shipping company's logistics system; (2) computer programs that extract data from spreadsheets; and (3) people keying in the data via web-form data entry screens.

Step 2: Create the EDI document

In the next step, software converts your internal data into the EDI standard format. This requires specialized translation software that defines how your internal data is to be mapped (i.e. correlated) to the EDI format (see Figure 1.3).

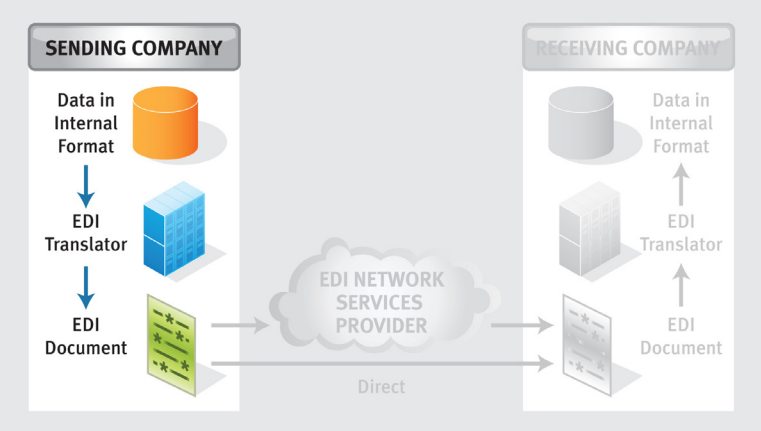


Figure 1.3: Creating the EDI Document

Translation software is available to suit just about any computing environment and budget, from large systems that handle thousands of transactions daily to PC-based software that need only process a few hundred or fewer transactions per week.

Step 3: Transmit the EDI document

There are two basic ways to transmit an EDI document. The first option is to send it directly to your business partner, usually via the Internet. The other option is to use the services of an EDI Network Services Provider, in which case you send the EDI document to the Provider, who then makes it available to your business partner. Using a Provider is often the easiest and best approach when you have many business partners, each using a different communications protocol (rules) that you would otherwise need to accommodate. See Figure 1.4.

See Chapter 3 for more details on the various EDI communications protocols.

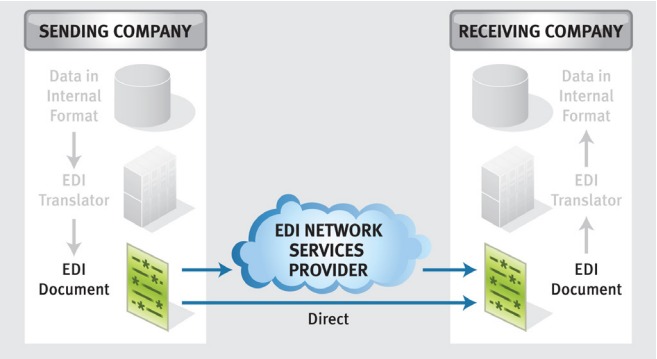


Figure 1.4: EDI Transmission Options

Two transmission options:

1. Send your documents directly to business partners.
2. Connect to an EDI Network Services Provider, who will make your documents available to your business partners.

Receiving EDI Documents

Receiving an EDI document is basically the reverse of the sending process. (1) You receive the transmitted EDI document; (2) your system converts the EDI data for your internal system; and (3) the data is fed into your internal system for processing, such as into a bank's payment origination system or a supplier's order management system.

Step 1: Receive the transmitted EDI document

As with sending a document, there are two basic options. You can receive the EDI document directly from your business partner or you can use the services of an EDI Network Services Provider, in which case your Provider receives the EDI document from the sender and then makes it available to your internal system.

See Chapter 3 for more details about your communications options.

Step 2: Convert the EDI document for Your Internal System

Software now converts the data from the incoming EDI document into the format used by your internal system. This requires specialized translation software that defines how the EDI data is to be mapped (i.e. correlated) to your internal data format.

For a discussion of translation software, see p. 76.

The same specialized translation software that is used to create EDI documents for sending is used in the receiving process (see Figure 1.5).

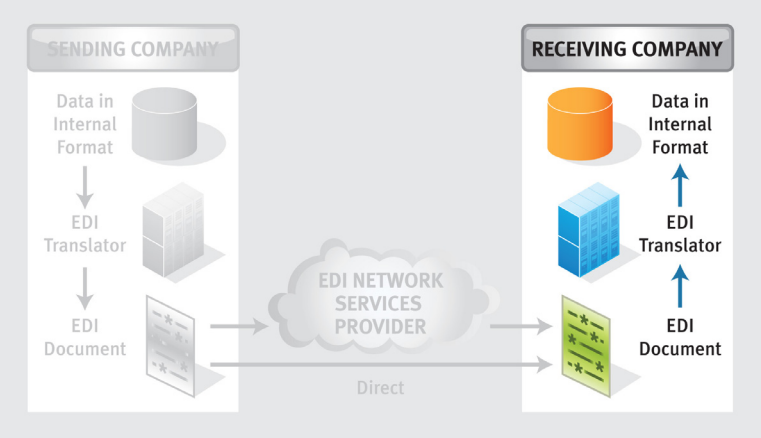


Figure 1.5: Converting the EDI Document

To receive an EDI document:

1. Receive the transmitted document;
2. Convert the EDI format into your internal format using translation software;
3. Feed the data into your internal system for processing.

Step 3: Feed data into your internal system for processing

Your computer application can now automatically feed the translated data into your system, such as your order management system, for immediate processing. Or, often for smaller companies that haven't fully integrated EDI with their internal systems, the incoming data is made available either as a report or on the computer screen.

Summary

Thus, there are several options available to you when configuring an EDI system for your business. You can perform data conversion in-house or use the services of an

EDI Network Services Provider. You can transmit your documents directly to your business partners via the Internet or transmit via an EDI Network Services Provider. Or, you may use a combination of these options in order to satisfy the requirements of your various trading partners.

Figure 1.6 below provides an overview of an EDI process in which the sender and the receiver each manages its own data conversion processes.

Many companies use a combination of transmission approaches. They:

- Send EDI documents directly to their largest-volume partners;
- Use an EDI Network Services Provider to exchange EDI documents with others.

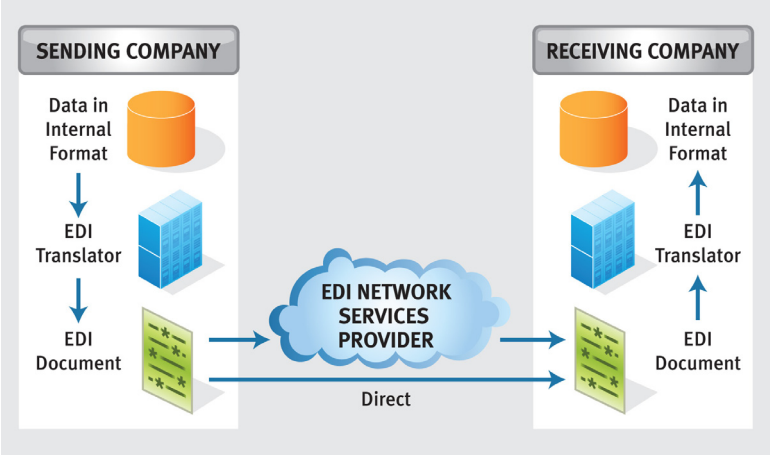


Figure 1.6: EDI Process Overview

The Benefits of EDI

EDI has helped simplify and improve commerce between trading partners for more than thirty years and its benefits continue to expand as it improves business processes such as electronic procurement, automated receiving, electronic invoicing, and electronic payments. EDI can help your company reduce the cost of personnel and office space, improve data quality, speed up business cycles, improve efficiency, and provide strategic business benefits. Let's look at the benefits that businesses across all industries are realizing by using EDI.

REDUCED COSTS: EDI reduces the costs of personnel, supplies, and office and storage space. Since paper documents are replaced by EDI transactions, expenses associated with paper—printing, reproduction, storage, filing, postage, and document retrieval—are all reduced or eliminated. Moving from a manual to an EDI process frees up personnel to concentrate on other aspects of the business. A major apparel manufacturer, after expanding its EDI program to include all its small retailers, was able to free up almost an entire warehouse for other company business due to reduced paperwork and personnel requirements.[1]

Research has consistently shown that EDI costs at most one-third of its paper-based equivalent. A U.S. manufacturer of electronic communications

Ten minutes can be saved in the handling of each invoice when they are received electronically—resulting in total savings of 120 million Euros per year. This is equivalent to potential savings of more than 2,000 man-years of work per year.

Global Standards Organization[2]

components reported a reduction in its order processing costs from $38.00 per order to $1.35 using EDI. [3] A major UK standards organization reports that "EDI can save businesses at least £14 per order, £8.5 per invoice and £12 per order using a despatch advice [advance ship notice]." It further reports "Ten minutes can be saved in the handling of each invoice when they are received electronically—resulting in total savings of 120 million Euros per year."[4]

Many AP departments devote more than 25% of their time to error resolution of invoices that don't reference a PO or have quantity and/or price discrepancies.

Leading Market Research Firm[6]

IMPROVED DATA QUALITY: When bad data makes its way into your internal systems, such as your accounts payable or transportation management systems, the results have a negative impact on your business. This includes overpayments, late or underpayments resulting in additional fees, lost revenue due to delays, and poor customer service. It has been estimated that data quality problems cost U.S. businesses more than $600 billion dollars a year.[5]

[*With EDI*] *the error rate improved from 20% to less than 1% and with 99.3% completeness …. Ocean carriers are now managing 10,000 loads per year, fewer than 10 per week that require error resolution by the retailer.*

Director of Logistics, Major U.S. Home-improvement Retailer[7]

The root of most data errors is the keying in of data from a paper document into your internal system. First, if the paper document is handwritten rather than computer-generated, it may be difficult to read, leading to input errors or phone tag to obtain clarification, both of which can cause delays in the business cycle. Even when the document is typed or computer-generated and thus legible, key-

ing errors can still occur. In the order entry process, these errors can result in shipping the wrong product, in the wrong quantity, at the wrong price, to the wrong address.

The electronic capture of business documents enables critical business data to be fed directly into your internal systems without relying on error-prone, manual re-keying, which is required when you use paper-based or email-based processes. Research has shown, for example, that with paper-based processes as much as five percent of the data on an invoice is inaccurate.[8] Having more accurate data means that the entire supply chain is more efficient.

SHORTER BUSINESS CYCLE: We have just discussed how manual data entry can greatly slow the business cycle. In addition, when using postal mail, your documents will take days to arrive. Sometimes, it may be weeks before you discover that the mail has been lost. Moreover, in the United States, at some point, Saturday delivery may be ended, which means that those businesses operating on weekends will have to wait even longer for their important documents to arrive. Delivery services such as UPS and Federal Express are very reliable but quite costly. And even with faxes, documents can remain at the fax machine or sit on someone's desk before any action is taken.

It takes a document sent by mail two weeks to reach [*our*] *Canadian suppliers. An invoice transaction moving via EDI takes place in a matter of minutes.*

Manager, Global EDI Communications, Chrysler Group LLC[9]

In contrast, EDI transactions can be exchanged in minutes instead of the days or weeks associated with postal mail. Furthermore, there is significant time saved by the elimination of data re-keying and its high error rate, which results in time-consuming corrective actions.

For many companies that use EDI, transactions that used to take five days using paper can be completed in under an hour. This reduced cycle time leads to faster payments and thus improved cash flow. Cash is no longer tied up in inventory or goods in transit and, therefore, can be applied to other areas of the business. A major automobile manufacturer reduced a key cycle time by 97 percent—a 30-day process was reduced to a mere 24 hours—and a major retailer reduced order-cycle time by 75 percent from 24 days to 6 days.[10] Some estimates suggest that EDI can result in 30 percent faster delivery time to customers.

IMPROVED BUSINESS EFFICIENCY: The benefits of streamlining processes with EDI can have a ripple effect throughout many of the operations of a business. Automating paper-based tasks frees staff to concentrate on higher-value tasks and provides them with the tools to be more productive.

For example, the use of EDI leads to less reworking of orders and invoices resulting from the

Each day, between 8 AM and 3 PM, 150 orders—mostly EDI—are processed electronically, sent to the warehouse and gone by midnight with very few people involved. In such an aggressively competitive market, supply chain efficiency and the consequent customer responsiveness is a fundamental benefit of EDI to us.

Planning Director at Bernard Matthews Ltd.[11]

elimination of errors due to manual data entry, invalid data, or missing data. EDI ordering and shipping provide greater visibility into the supply chain, leading to fewer stock-outs and resulting lost sales. EDI invoicing enables buyers to process and approve invoice payments faster. This allows buyers to take full advantage of timely payment discounts, which in turn means improved cash flow for the suppliers.

The use of EDI reduces order processing and delivery times, enabling organizations to reduce their inventory levels. In fact, research indicates that by sending even just half their purchase orders electronically, companies can realize at least a 20-percent inventory-level reduction.[12] In the automotive industry, which relies heavily on Just-in-Time manufacturing, the exchange of EDI documents is an absolute necessity. Its speed and accuracy are at the heart of a Just-in-Time environment.

EDI is integral to a successful Just-in-Time (JIT) strategy to increase efficiency and reduce inventory costs by receiving materials used in production only as they are needed.

IMPROVED DATA SECURITY AND EASE OF AUDITING: In this highly competitive, international world of business, data security is paramount to the success of a company. Documents that circulate in an office or that can be changed by several people may not be secure. With fully integrated EDI, in which data flows directly from computer to computer, data can be exchanged in a highly secure environment.

In addition to keys and passwords to protect the data, encryption and decryption programs are used, so that even during the few seconds it takes to transmit the data from sender to receiver the data is secure. Even when an EDI Network Services Provider is used to perform translation, there can be "encryption at rest" programs, so no one at the Provider's data center can see or violate the data. Of course, in today's environment, it is necessary for companies to install firewalls in their own data centers to prevent hackers from stealing data. But this is true of internal systems, whether you use EDI or not.

Corporate auditing is made easier and faster since the EDI process eliminates many of the discrepancies and problems that can creep into a paper-based system. Moreover, all the EDI transactions can be made easily available to the auditor in reports, thereby improving accuracy and reducing productivity loss during the auditing process.

EDI is integral to [*our*] *track record of sustained growth. A marker of this success is the fact that in the recent past* [*we have*] *managed to increase* [*our*] *market share in four of* [*our*] *five core categories.*

Business Systems Analyst at Daniels Group[13]

STRATEGIC BUSINESS BENEFITS: Beyond the direct cost and time-saving benefits of EDI described above, EDI provides the foundational technology that, when combined with other collaborative commerce capabilities available today, enables dramatic strategic benefits. For example, in today's fast-paced business environment, electronic trans-

actions enable real-time visibility into transaction status. This, in turn, enables faster decision-making and improved responsiveness to changing customer and market demands.

In some industries, EDI enables businesses to adopt a demand-driven business model rather than a supply-driven one, because it shortens the lead times for product enhancements and new-product delivery, streamlines the ability to enter new territories and markets, and provides a common business language that facilitates the communication and collaboration of businesses throughout the world.

Moreover, EDI promotes corporate social responsibility and sustainability by eliminating paper from the supply chain and replacing paper-based processes with "green" electronic alternatives. This will both save you money and make your company part of the solution to our overall "carbon footprint."

As the company's use of EDI increased, [*we*] *halved the number of administration staff, and maintained this level while the company expanded its trading partners to over 100. Today, 90 percent of the company's business is transacted electronically via EDI.*

Planning Director at Bernard Matthews Ltd.[14]

As we have seen, the benefits of using EDI are many and have a far-reaching effect throughout the company. Later, in Chapter 4, we will examine how EDI brings benefits to specific business processes, such as ordering, invoicing, receiving, and payments.

EDI Milestones

1970s	Businesses experiment with proprietary forms of EDI.
1973	FTP communications protocol published.
1975	First EDI standard released for transportation industry (referred to as TDCC standard).
1981	ANSI X12 EDI published for some industries, including retail sectors and banking.
1982	ANSI X12 EDI standard published for cross-industry with North American focus. Major retail and auto companies begin to demand use of EDI by suppliers.
Late 80s	Industry-specific subsets of X12 published. Large businesses widely adopt standards-based EDI. International EDI standard starts development (UN/EDIFACT).
1996	EDI documents exchanged across the Internet.
2000	Proprietary XML-based approaches developed. EDI solutions for small and medium-size businesses developed.
2001	AS2 communications protocol published. U.S. Dept. of Defense mandates electronic invoicing for all contractors. European Union mandates that electronic invoicing be accepted by all members.
Present	EDI continues to be adopted globally as the foundation for end-to-end automation of business processes.

* 2 * 2 * 2 *

WHAT ARE EDI DOCUMENTS AND STANDARDS?

In this chapter, you will learn:

- ☞ *The role of EDI Standards when exchanging EDI documents*
- ☞ *The most commonly used EDI documents in the procure-to-pay, order-to-cash, manufacturing, logistics, and financial business processes*

AN EDI DOCUMENT is simply an electronic version of a paper document that adheres to the rules of a standard format. When two companies use the same EDI standard format for their business documents, their computers "speak" the same language. This enables the exchange of documents between the computers without human intervention.

EDI Standards

Many EDI standards are available, but ANSI X12 is most commonly used in North America, while EDIFACT is most commonly used throughout the rest of world.

There continues to be confusion as to whether or not XML is an EDI standard. XML is not actually a standard at all; it is a powerful language that gives a company a

great deal of flexibility in defining and constructing business documents, such as the documents defined by ANSI and EDIFACT. A major structural difference between XML and EDI is that whereas EDI is based upon strict rules governing the position of data within a file, data in an XML file is not bound to a specific location and is instead identified by tags, such as "<quantity>300 </quantity>" to indicate a quantity value of 300. This results in XML files being much larger than their comparable EDI files. Some standards, such as RosettaNet, are based on XML.

At one point, it was expected that XML would replace EDI. However, many businesses that have invested heavily in EDI, which is efficient and works extremely well, see no need to spend the money "to reinvent the wheel." Thus, EDI will be a mainstay for business into the foreseeable future.

The ANSI and EDIFACT standards can be applied across all industries. Subsets of these standards, such as VICS and EANCOM, have been developed to meet the special requirements of certain industries. These subsets define industry-specific documents, data fields, and rules.

The two most common EDI standards are:

ANSI X12

In 1979, the American National Standards Institute (ANSI), which had been founded "to oversee the creation, promulgation and use of…norms and guidelines…to ensure competitiveness of U.S. businesses," formed the

Accredited Standards Committee (ASC) X12 to develop uniform standards for the inter-industry electronic exchange of business transactions. From its inception, ANSI X12 was designed to support companies across different industry sectors in North America. Today there are hundreds of thousands of companies worldwide using X12 EDI standards in daily business transactions.

Two examples of ANSI subsets currently in use are:

AIAG: The AIAG standard was developed by the Automotive Industry Action Group (AIAG) for the North American automotive industry.

VICS: The Voluntary Inter-industry Commerce Standard (VICS) is used by the general merchandise retail industry in North America, including thousands of department and speciality retail stores, mass merchandisers, and their respective suppliers.

UN/EDIFACT

The Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT) was developed with versions for individual European countries. Under the auspices of the United Nations, and with input from the American National Standards Institute (ANSI), a UN/EDIFACT standard was developed to address the international business community. Today, this is the most common standard used by European businesses. Two examples of EDIFACT subsets currently in use are:

EANCOM: Developed in 1987 by GS1, a global standards body, EANCOM is a subset of UN/EDIFACT. The key benefit of this standard is that it incorporates the European Article Number (EAN), a system of product codes to identify products throughout the world. This greatly facilitates international trade, since a company can easily order an item from a supplier anywhere in the world without knowing the specific item code used by the internal system of that particular supplier. EANCOM was originally developed for the retail sector and has subsequently grown to become the most widely used UN/EDIFACT subset. It is now used in a variety of other industry sectors such as health care, construction, and publishing.

ODETTE: The ODETTE message standard was developed by the Organisation for Data Exchange by Tele Transmission in Europe (ODETTE), specifically for the automotive industry in Europe.

Other standards include:

HIPAA: The Health Insurance Portability and Accountability Act (HIPAA) was enacted by the U.S. Congress. A key component of HIPAA is the establishment of national standards for electronic healthcare transactions and national identifiers for providers, health insurance plans, and employers. The standards are meant to improve the efficiency and

effectiveness of the U.S. health care system by encouraging the widespread use of EDI. The HIPAA EDI transaction sets are based on ANSI X12.

RosettaNet: The RosettaNet standard, based on XML, was developed by a consortium of major computer, consumer electronics, semi-conductor manufacturers, and telecommunication and logistics companies. It facilitates industry-wide global supply chain processes.

SWIFT: The Society of Worldwide Interbank Financial Telecommunication (SWIFT) developed a financial messaging network between banks and other financial institutions for a standards-based exchange of financial information. The SWIFT document standard governs aspects of financial activity: payments, trade services, and securities.

Tradacoms: Introduced in 1982, Tradacoms is an EDI standard primarily used in the UK retail sector that utilizes the product code system developed by the UK Article Numbering Association. Though superseded by EANCOM, it is still used by many businesses in the UK today.

VDA: VDA is a standard developed by the German automobile association, Verband der Automobilindustrie. VDA standards are used by companies such as VW, Audi, Bosch, Continental, and Daimler AG.

Common Business Documents

The document standards discussed above define hundreds of business documents from which different industry groups select those that pertain to their business. The documents used most commonly, however, deal with the procure-to-pay and order-to-cash processes. Some of the most frequently used documents are listed below with their ANSI numerical and EDIFACT six-letter name identifiers:

PRODUCT CATALOG (832/PRICAT): A document provided by a supplier to its customers, containing a list of products and services available, including information such as description, pricing, quantities available, and unit of measure. The buyer can then directly issue a purchase order for items in the product catalogue. This document is extremely popular in the retail industry.

PURCHASE ORDER (850/ORDERS): A document issued by a buyer to a seller that defines the terms of sale under which the buyer will purchase the seller's goods. This document can also be used as a blanket purchase order against which the buyer can issue an EDI Material Release (830/DELFOR) for partial deliveries as needed throughout the life of the purchase order.

Most commonly used EDI documents:

- Purchase Order
- Advance Ship Notice
- Invoice

Others frequently used:

- Product Catalog
- Purchase Order Acknowledgment
- Remittance Advice

PURCHASE ORDER ACKNOWLEDGMENT (855/ORDRSP): Confirmation to the buyer that the supplier will be filling the purchase order as requested.

ADVANCE SHIP NOTICE (856/DESADV): An electronic version of a printed packing slip that tells a buyer that goods have been shipped, how they have been packed, and the estimated arrival time. The Advance Ship Notice document is also referred to as a Delivery Notice or Despatch Advice. This extremely important document is at the core of many automated business processes, such as Evaluated Receipt Settlement, drop shipping, and Just-in-Time delivery. These and other business processes are discussed in more detail in Chapter 4.

Industry research identifies that the sector can save £12 per order in cost if the Advance Ship Notice is sent to trading partners before the order is delivered.

Global Standards Organization[1]

INVOICE (810/INVOIC): A request for payment for goods or services that communicates to a buyer the specific items, prices, and quantities. Payment terms will usually accompany the billing information.

REMITTANCE ADVICE (820/REMADV): A notification from a buyer to a supplier that payment has been made, usually via electronic funds transfer. Receipt of this document enables suppliers to reconcile which invoices have been satisfied by any given payment.

In addition, there is a special EDI document that is not a business document, but serves to streamline the EDI process:

FUNCTIONAL ACKNOWLEDGMENT (997/CONTRL): Often referenced as an FA, this is an electronic "receipt" from the receiver of an EDI transmission to its sender to indicate simply that the EDI document was successfully received and read by the computer. It does not indicate that the receiver is acting upon the contents of the document. Other documents acknowledge that the contents are being acted upon, such as the Purchase Order Acknowledgment and the Purchase Order Change Acknowledgment.

Manufacturing-Specific Documents

In addition to the documents noted above, manufacturers such as original equipment manufacturers (OEMs) in the automotive industry commonly use the following documents with their suppliers:

Manufacturers such as OEMs commonly exchange:

- Planning Schedule
- Shipping Schedule

PLANNING SCHEDULE/MATERIAL RELEASE (830/DELFOR): A forecast notification from the manufacturer to the supplier of the materials needed for a period of time, for example, for the coming twenty weeks. When used by an OEM, this is not an actual order; rather, it is a forecast to enable suppliers to manage materials and other resources to ensure

that they can ship when the goods are finally ordered. When used by other manufacturers, it can serve as both a forecast and a shipping schedule that authorizes the supplier to ship the goods on specific dates.

SHIPPING SCHEDULE (862/DELJIT): An authorization from the manufacturer to the supplier to ship goods according to a specific short-term schedule. It provides detailed shipping requirements and adds more specific instruction to the Planning Schedule/Material Release that may have been provided earlier.

Logistics EDI Documents

The Advance Ship Notice, described above under Common Business Documents, is a central document in the logistics process. It can be sent by the shipper to the recipient and/or by the carrier to the recipient. The following documents are also commonly used:

FREIGHT DETAILS AND INVOICE (110 for air carriers, 210 for motor carriers, 310 for ocean carriers and 410 for rail carriers /EDIFACT IFTMCS): Sent from the freight carrier to the shipper to bill for shipment services. The document can include details of the items being shipped, as well as other information normally found on an invoice.

Our leader companies used e-business connections with logistics providers for 90% of tenders and orders. With predictable commit times in the logistics process, these companies had 36% shorter order-to-delivery cycle times.

Market Research Report[2]

CARRIER LOAD TENDER (104 for air carriers, 204 for motor carriers, 304 for ocean carriers and 404 for rail carriers / EDIFACT CONTEN): From the shipper to carriers, these documents have multiple uses, such as providing information needed by carriers to bid on freight services or by Customs to clear shipments. It contains information such as a description of the goods, destination and other shipping instructions.

Logistics documents commonly exchanged between shipper, carrier, and recipient:

- Freight Details and Invoice
- Carrier Load Tender
- Transportation Carrier Shipment Status

TRANSPORTATION CARRIER SHIPMENT STATUS MESSAGE (214 for domestic, 315 for international/EDIFACT IFTSTA): A notification by the carrier to the shipper or receiver regarding the status of a shipment. It can include the estimated date and time of arrival, destination point, reasons for delays, and so on.

Financial EDI Transactions

The following EDI transactions are commonly exchanged between the payers, payees, and their banks and/or other financial institutions.

PAYMENT INSTRUCTION AND REMITTANCE ADVICE (820/REMADV): A notification from a business to its bank to make a payment. Payment can be made via check or electronic funds transfer, such as Automated Clearinghouse (ACH) or wire transfer.

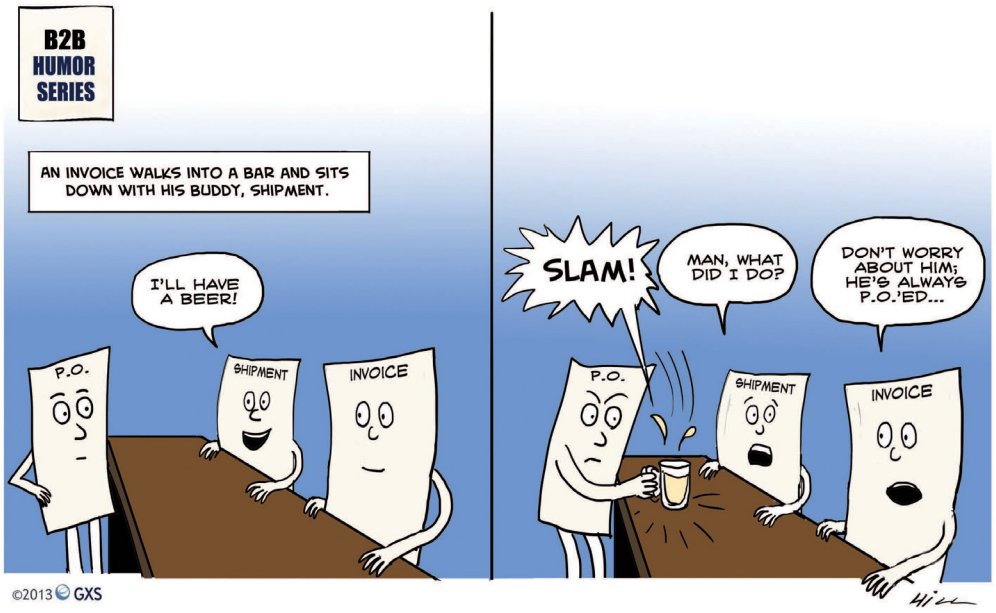
LOCKBOX (823/DEBADV): A document used by a financial institution to share details about checks collected in a wholesale or retail lockbox facility. This is used by a bank's client, such as a credit card company, that needs to collect payments from many sources. This document is sent from the bank to its client with information about all the individual payments received, enabling reconciliation of each account.

APPLICATION ADVICE (824/APERAK): A notification from the financial institution to the payer that there is a problem executing payment due to such factors as incorrect routing or a wrong account number.

DEBIT AUTHORIZATION (828/DIRDEB): Sent from a business to its financial institution to authorize payment of a debit request.

Financial documents frequently exchanged between payers, payees, and their banks or other financial institutions:

- Payment Instruction
- Lockbox
- Application Advice
- Debt Authorization


B2B
HUMOR
SERIES
AN INVOICE WALKS INTO A BAR AND SITS DOWN WITH HIS BUDDY, SHIPMENT.
I'LL HAVE A BEER!
P.O.
SHIPMENT
INVOICE
SLAM!
MAN, WHAT DID I DO?
DON'T WORRY ABOUT HIM; HE'S ALWAYS P.O.'ED...
P.O.
SHIPMENT
INVOICE

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WHAT ARE YOUR COMMUNICATIONS OPTIONS?

In this chapter, you will learn:

- ☞ *The basic approaches to connecting to your trading partners and how to choose the best one for your company*
- ☞ *The most commonly used communications protocols and the five factors you should consider when selecting the best one for your company*

WHEN YOUR COMPANY exchanges business documents electronically with your business partners—your customers, suppliers, logistics providers, and/or banks—you need to make two major communications-related decisions. First, what is your overall approach for connecting to all your partners? And second, which of the various communications protocols will you need to implement?

Communications protocols are rules that govern the format and transmission of data between computers.

To help you make these decisions, this chapter will list the basic approaches for connecting to your trading partner community and the issues and benefits of each. After that, we present the most commonly used communications protocols and how to decide which is best for your company.

Direct Connection Model

In the direct connection approach, you and your trading partner connect directly via the Internet using the same communications method or protocol. However, this approach can become very complex and resource intensive if your other trading partners are using different communications protocols. Your system must then be able to support each of these protocols.

The direct connection model is most often used by large corporations that exchange high volumes of EDI documents.

This approach is most commonly used by large corporations that have business partners with whom they exchange a high volume of EDI documents.

If you choose to implement the direct connection model, you will need to purchase a software package that enables you to use all the agreed upon protocols, such as AS2, SFTP, FTPS. Then you will need to agree with each of your partners on (1) which of these communications methods or protocols you and the trading partner will use and (2) the specific protocol settings or options to be used when exchanging your files of EDI documents.

Figure 3.1 illustrates the direct connection scenario. This model can be very complex due to the wide variety of communications protocols that must be used and supported. Very few businesses today connect directly to all their trading partners.

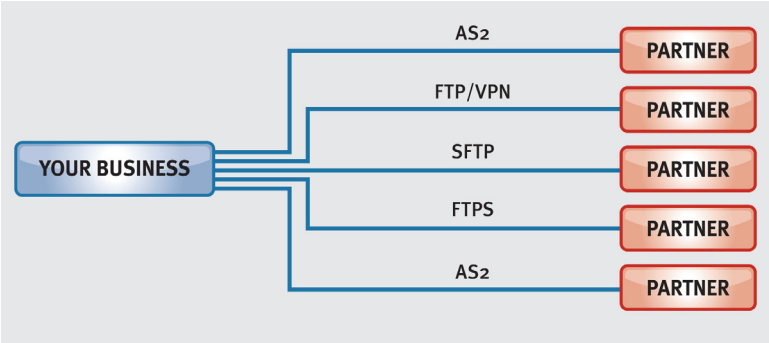


Figure 3.1: Direct Connection Model

Network Model

An alternative to the direct connection model is to work exclusively through an EDI Network Services Provider, which, in the days prior to the Internet, was referred to as a Value-Added Network (VAN). Many businesses use the network model to shield themselves from the complexities of supporting varying communications protocols required by different business partners.

Using an EDI Network Services Provider shields you from the complexities of supporting multiple communications protocols.

In the network model you have just a single connection to your Provider for all your EDI transactions and all your trading partners, using whatever protocol you prefer, such as AS2 or one of the secure FTP protocols. You don't have to worry about which protocols your partners

are using. At the same time, your business partners also connect to a Provider, either the same one you are using or a different one. If different, most Providers will connect to each other in order to complete the EDI file exchange.

In this way, each partner makes an independent decision regarding its preferred communications protocol, relying on the Provider to mediate the differences between the various trading partner protocols. There are additional benefits to using an EDI Network Services Provider, such as ensuring data security, validating the identity of the sender (non-repudiation), and providing audit information, reporting, backup, and recovery. Using a Provider also relieves all community members of the resource-intensive responsibilities for resolving communications issues.

Our B2B trading partner network has reduced our capital commitment and improved inventory management, while enabling us to react more quickly to customer enquiries.

Integration Team Leader at NXP Semiconductors[1]

The EDI Network Services Provider charges transaction fees for these services, to a large extent based upon the volume of transactions handled. Your business is still responsible for generating and processing all EDI documents exchanged, which means you must have highly skilled EDI personnel. However, you do not need the specialized communications resources required in the direct connection model.

The graphic below illustrates the EDI network model in which you and your business partners—each of you using your own preferred communications protocol—exchange EDI documents using an EDI Network Services Provider.

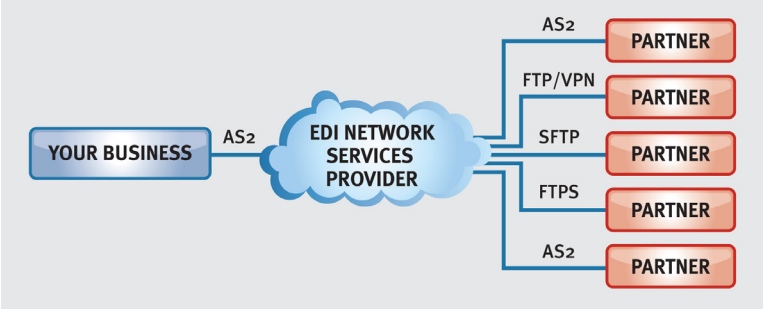


Figure 3.2: Network Model

Direct or Network—Which is better?

Use of the EDI network model for 100 percent of an EDI trading community was extremely popular before the rise of the commercial Internet. Today, many businesses use a combination of the two approaches. In order to save on Provider transaction fees, they connect directly via the Internet to the trading partners with whom they exchange the highest volume of transactions, using one or two preferred protocols. They will also leverage the EDI Network Services Provider, with its benefits, for trading with their large number of lower-volume trading partners, as well as with those partners using a communications protocol they cannot support.

Advocates of the direct connection approach argue that it is much cheaper than using an EDI Network, particularly for high volumes of EDI documents. However, when calculating your overall costs, you must factor in the

cost of purchasing, managing, and maintaining the additional communications software and the cost of highly skilled personnel with expertise in secure Internet communication, as well as in EDI. Furthermore, as the size of your community grows, you will need additional resources to implement and support each new trading partner. You need to continually monitor communications, manage trading partner calls, and resolve issues quickly. All these vital processes are resource and time intensive.

See Chapter 6 for a comprehensive review of the tasks involved in implementing an EDI program.

Most Commonly Used Communications Protocols

The rapid growth of the Internet to the point of near universal connectivity is now enabling business partners to communicate and exchange files more easily than ever before, although sometimes at the expense of other requirements, such as security, privacy, and manageability. Therefore, when you choose a communications protocol such as AS2 or FTP for exchanging business documents via the Internet, you need to choose carefully.

In order for two computers, whether within your company or across the Internet, to exchange files or documents, your system needs special file-handling software that follows certain communications rules (protocols). If you communicate directly (see p. 34), both you and your partner must use the same protocol. If you communicate directly with many partners, each of which uses a different protocol, you will need software that supports each one of

those protocols. This is a major reason why many companies select the network model—it shields them from this complexity.

There are five key factors you should consider when selecting the best communications protocol for your company:

DATA SECURITY: When you are dealing with documents that contain sensitive data, you must be sure that while they are being transmitted across the Internet, they are safe from others who may try to intercept and read them. Each communications protocol takes a different approach to securing information. Some protocols encrypt everything in the transmission (channel encryption), whereas others encrypt only the actual data (payload encryption).

NON-REPUDIATION: Repudiation refers to the ability to confirm that a document was actually sent by the sender indicated within the file being exchanged. This also serves as proof when business partners deny having sent you a document.

MESSAGE MANAGEMENT: When you exchange documents with your business partners, you need to know whether the documents were successfully received and decrypted. For example, a major factor in determining whether you get paid is whether your partner received the bill. Or, if you're trying to plan for the arrival of a shipment at your receiving

Five factors to consider when choosing a communications protocol:

1. Will it keep the data safe from hackers?
2. Can you be confident that the sender is legitimate?
3. Does it let you know whether your partner has successfully received your transaction?
4. Does it require lots of resources to install and maintain?
5. Will your version work with your partner's version?

dock, getting a shipment notice is crucial. Thus, confirmation of receipt for EDI documents is extremely important for businesses to operate efficiently.

EASE OF SETUP AND USE: Different protocols may necessitate different levels of resources to install and monitor its operation on a day-to-day basis.

INTEROPERABILITY: Many software vendors offer versions of each protocol. However, versions of the same protocol provided by two different vendors may not always be able to communicate with each other. So, when you and your partners select a protocol, you must be sure of interoperability.

Below is a list of the most commonly used communications protocols for the exchange of EDI documents via the Internet and how well each addresses the five key factors listed above. Any of these can be used to connect to business partners directly (direct connection model) or to connect to them via an EDI Network Services Provider (network model).

FTP (File Transfer Protocol) with **VPN** (Virtual Private Network)

FTP with VPN
- ✔ Security
- ~~Non-repudiation~~
- ~~Message Management~~
- ✔ Ease of Use
- ~~Interoperability~~

FTP was the first robust, reliable file transfer protocol developed and is still used today by many businesses, particularly for file exchange within a company. However, FTP by itself does not provide the security needed for documents exchanged with other companies over the

Internet. For this reason, businesses that use FTP use it in conjunction with VPN software to provide the security layer needed.

However, neither FTP by itself nor FTP with VPN provides non-repudiation or message management. Moreover, interoperability may be an issue because there are many different ways of implementing VPN on your system, as well as possible differences in versions of VPN. Although FTP with VPN does not address all five factors, you can use it to connect to an EDI Network Services Provider, which then provides the non-repudiation, message management, and interoperability required.

SFTP (Secure File Transfer Protocol) and **FTPS** (File Transfer Protocol Secure)

Both SFTP and FTPS are secure Internet protocols. The major difference is in how each provides security and performs encryption. The security layer used by SFTP was developed by the Internet Engineering Task Force, while the security layer used by FTPS was developed by the Internet browser company Netscape.

SFTP and FTPS
- ✔ Security
- ~~Non-repudiation~~
- ~~Message Management~~
- ✔ Ease of Use
- ~~Interoperability~~

Both protocols encrypt the data while in transit, keeping it safe while moving over the Internet, and then decrypt it upon arrival at its destination. However, neither provides non-repudiation or message management. As with FTP with VPN above, interoperability is a major issue, and again you can use either to connect to an EDI Network Services

Provider, which then provides the non-repudiation, message management, and interoperability required.

AS2 (Applicability Statement 2)

AS2 was developed specifically to overcome the limitations of the other security protocols listed above. In addition to providing a high level of data security, it addresses non-repudiation, message management, and interoperability. It was developed by the Internet Engineering Task Force (IETF). The major boost to its usage was when it was mandated by Walmart as the only acceptable communications protocol for suppliers wishing to do business with them. Its usage soon spread to other major businesses.

AS2
- ✔ Security
- ✔ Non-repudiation
- ✔ Message Management
- ? Ease of Use
- ✔ Interoperability

Let's look at how AS2 addresses non-repudiation, message management, and interoperability.

NON-REPUDIATION: AS2 uses a system of keys to ensure non-repudiation. A private key is used by one business to encrypt its digital signature (a special identity code) on a file being transmitted. That company's public key is provided to all its business partners for use in decrypting the digital signature. No other key will work, thus verifying the identity of the sender.

INTEROPERABILITY: AS2 is backed by the Drummond Group, an organization that certifies that versions from different vendors are compatible. Thus, you are guaranteed that if you buy any two products

from the list of Drummond-certified products, they will work together well.

MESSAGE MANAGEMENT: AS2 provides a status message called the Message Disposition Notification (MDN), which informs you that the transmission was successfully received, decrypted, and verified.

AS2 requires:

- 24x7 dedicated server
- 24x7 highly skilled support personnel
- Management of public and private encryption keys

There are several challenges to successfully implementing AS2. AS2 is a "push" protocol, meaning documents are sent as soon as they are available and the business partner must be ready to receive them. The recipient's server must be up and running 24x7, with personnel ready to troubleshoot any communications issues. In addition, management of the private and public encryption keys used for non-repudiation and security adds another layer of complexity to its operation. Moreover, because AS2 is much more sophisticated than the other protocols, a highly skilled staff will be needed to support it.

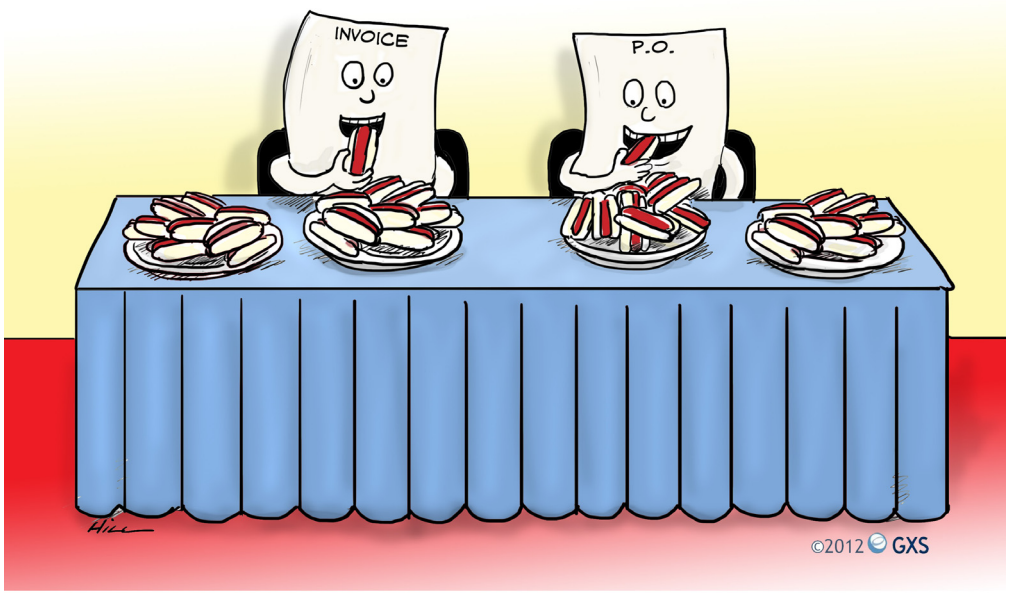
AS2 has the most functionality, but requires a higher level of commitment.

In summary, you have several choices when selecting a secure communications protocol for your EDI documents. AS2 best addresses all the key requirements, but requires a higher level of commitment. Because of its full functionality, many companies opt to use AS2 for exchanging EDI documents when connecting to both their direct connection partners and to an EDI Network Services Provider for the rest of their partner community. If you use one of the other secure protocols, then use of a Provider should be considered in order to address the gaps in capabilities.

Many companies use AS2 for direct connect partners and an EDI Network Services Provider for the rest of their trading community.

B2B HUMOR SERIES

AN INVOICE AND A PURCHASE ORDER ENTER A HOT-DOG EATING CONTEST...WHICH ONE WINS?



ANSWER: THE PURCHASE ORDER...THE INVOICE 810, BUT THE PURCHASE ORDER 850.

* 4 * 4 * 4 *

WHICH BUSINESS PROCESSES TYPICALLY BENEFIT FROM EDI?

In this chapter, you will learn:

- ☞ *How EDI can streamline the procurement process*
- ☞ *How EDI can streamline the shipping and receiving process, including a look at cross-docking, drop shipping, and direct store delivery*
- ☞ *How EDI can streamline the invoicing and payment process, including the non-PO and evaluated receipt settlement processes*

AS WE HAVE SEEN, EDI enables organizations to reduce cost and inefficiency resulting from manual, transaction-based processes. By automating the exchange of data between applications across a supply chain, EDI can ensure that business-critical data is sent on time, every time; is securely sent to or received from trusted trading partners; can be tracked in real-time; and can be audited after the event. In today's highly competitive world, the use of B2B technology such as EDI may be the difference between success and failure.

EDI can help streamline three common business processes:

- Procurement
- Shipping and Receiving
- Invoicing and Payment

We will now discuss how EDI can streamline three common business processes: procurement, shipping and receiving, and invoicing and payment.

Procurement

Procurement was the first business process for which the use of EDI was widely adopted across industries. Typically, a company's Enterprise Resource Planning System (ERP) or other back-office system automatically generates the purchase order. It is also common to order goods from an electronic catalogue. In the latter process, after negotiating specific terms and prices with a customer, the supplier creates an electronic catalogue for that specific customer, which may be on the supplier's system, hosted by an EDI Network Services Provider, or sent to the customer for integration with its procurement system. An employee or the procurement system accesses the catalogue and places the order, which then automatically triggers the creation of the EDI Purchase Order.

The basic EDI document flow in the procurement process involves four key documents: the Purchase Order, the Purchase Order Acknowledgment, the Purchase Order Change, and the Purchase Order Change Acknowledgment (see Figure 4.1).

The buyer transmits an EDI Purchase Order to the supplier. A supplier can then send a Purchase Order Acknowledgment back to the buyer, in which the sup-

plier agrees to fulfill the order according to the terms of the purchase order.

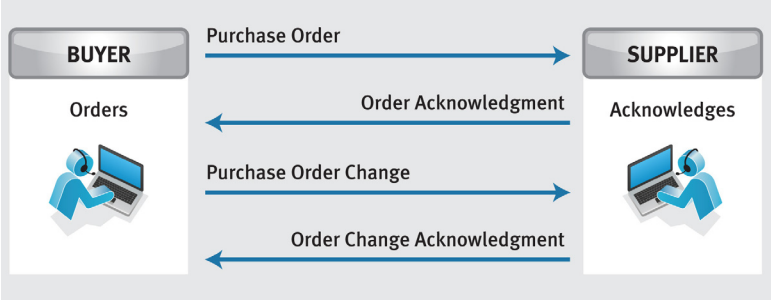


Figure 4.1: Basic EDI Document Flow in Procurement Process

If the supplier is unable to meet all the purchase order requirements, the Purchase Order Acknowledgment can provide information as to which portions of the order can be fulfilled. The buyer can then transmit a Purchase Order Change document when there is a need to change the original purchase order, due either to a change in the buyer's needs or because the supplier cannot meet all the requirements in the original purchase order. The supplier then sends a Purchase Order Change Acknowledgment back to the buyer. Use of the Purchase Order Change and Purchase Order Change Acknowledgement documents

simplifies a process that otherwise, when handled manually, can be very complex. In fact, in some industries such as the general merchandising segment a purchase order is often changed four or more times.

Upon receipt of each document, the EDI system automatically sends a Functional Acknowledgment to notify the sender that the document was successfully received.

Automating the exchange of purchase order-related documents provides numerous benefits:

- Faster, more accurate order-to-receipt process due to the elimination of slow, error-prone manual ordering;
- Reduction or elimination of resource-intensive and time-consuming order status inquiries by both buyer and seller due to the use of EDI status documents that provide you with new visibility into your supply chain;
- Increased buyer flexibility due to the speed and accuracy of the EDI process. For example, the buyer can quickly seek alternative suppliers when a purchase order cannot be fulfilled;
- Higher levels of satisfaction by the seller, the buyer, and the buyer's customers resulting from the benefits above.

Baosteel, the largest steel producer in China, stated that the main driver for implementing and extending e-business applications was the need to align processes toward customer-centric operations. Baosteel successfully improved workflow operational efficiency by 60%, reduced order cycle time by 20%, and drove down process costs.[1]

We are now far more responsive to the needs of our customers. As a result, we're not only reaping the impressive time- and cost-saving benefits, but also improving our customer relations. With less administration time and improved document accuracy we can focus our time on addressing more qualitative issues around the way we do business.

Director of IT
at Organic Farm Foods[2]

Shipping and Receiving

EDI enables goods to be shipped in a timely and accurate manner according to ever-changing buyer-specific requirements. This is vital to a manufacturer operating in a Just-in-Time (JIT) environment and to a retailer with a continuous replenishment program (CRP) for its inventory. The critical document in support of all shipping processes is the Advance Ship Notice (ASN), which lists the details of a shipment of goods due to arrive from a supplier, a third-party logistics provider (3PL), or a fulfillment agent. Typically, the ASN includes much of the information that was included on the buyer's original purchase order. It also includes carton identifications, content descriptions, and transportation details. New uses are continually found for the ASN. For example, some companies use data in the ASN to help them generate the Customs 10+2 Importer Security Filing for international shipments entering the United States.

Companies that receive EDI ASNs prior to receipt of goods save approximately £12 per order.

Global Standards Organization[3]

EDI documents such as waybills from air and rail carriers, EDI status updates from truckers, and Bills of Lading from ocean carriers can enable both the shipper and the receiver to see where the shipment is in transit. This enables them to take any action required, such as expedited shipments when there is a delay.

The ASN often works together with the barcoded shipping label that suppliers affix to the carton/pallet/boxes being shipped. The identifying numeric characters of the

barcode are also included in the ASN document, which can be read into the buyer's warehouse management system (WMS). When a shipment arrives, receiving personnel scan the barcode affixed to the pallet of goods. The barcode is then automatically matched against the records in

The ASN document is a critical component for improving the efficiency of warehouse/distribution center processes.

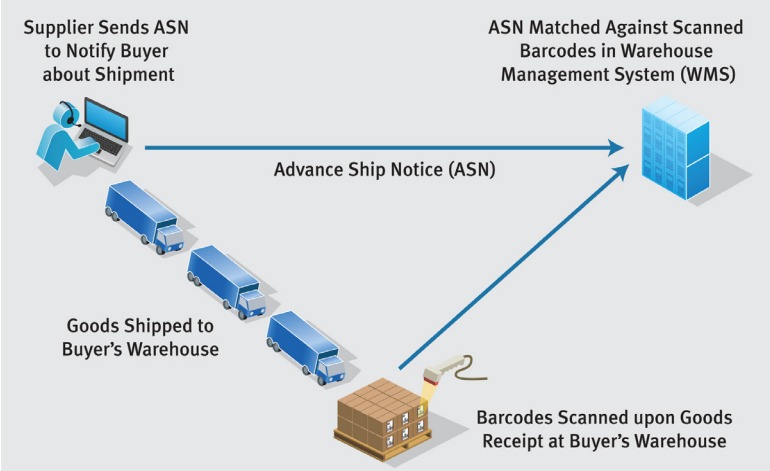


Figure 4.2: Basic EDI Document and Goods Flow in Shipping Process

the warehouse management system to verify shipment accuracy. As a result, inventory levels are updated and warehouse personnel are notified where to forward the received goods.

Although the ASN is the most popular shipping transaction, there are many other EDI transportation docu-

ments that are used in the supply chain, particularly for international freight. For ground, air, or ocean shipments there are specific EDI load tender documents used by shippers to solicit bids from transportation carriers to provide delivery services. The carrier selected to make the delivery can provide EDI delivery status updates to both shipper and receiver. In some cases, the carrier will send shipment status updates as the goods reach different points in the supply chain.

For the retail industry, the ASN enables suppliers to participate in cross-docking, drop shipping, and direct store delivery (DSD) initiatives.

CROSS-DOCKING: The majority of goods received into distribution centers are not destined to stay very long. Often, shipments are to be forwarded to another location, such as a nearby manufacturing plant, a retail store, or a customer location. In the practice known as cross-docking, goods are immediately moved from the receiving dock to the outbound dock. Informed by the ASN and the barcode as to what has arrived and where, the warehouse management system can now route cartons internally through automated conveyor systems for cross-docking. The use of the ASN in the cross-docking process can significantly reduce inventory across the supply chain.

The use of the ASN in the cross-docking process can significantly reduce inventory across the supply chain.

DROP SHIPPING: The ASN document is a critical component of a successful drop shipping process. With drop shipping, after a consumer places an order on a retailer's website, the retailer sends an EDI Purchase Order directly to the supplier for fulfillment. Some retailers even provide the supplier with custom-branded packaging materials to create the appearance of the package having been shipped directly from the retailer. The supplier includes all required paperwork, such as special packing-list forms and return label, with the shipment. The supplier ships the package directly from its warehouse to the consumer and sends an EDI Invoice and ASN to the retailer. The ASN includes the carrier tracking number, as well as other drop shipping information. The retailer then notifies the consumer of the shipment, usually via email, and provides the tracking number of the shipper (e.g., UPS, FedEx, DHL) so that the consumer can link to the shipper's site for additional status updates. The consumer receives the goods, at which point the carrier updates the shipment status as "delivered."

In the drop shipping process the supplier ships the package directly from its warehouse to the consumer and sends an EDI Invoice and ASN to the retailer. The ASN includes the carrier tracking number, as well as other drop shipping information.

Another EDI document that is integral to the drop shipping process is the Inventory Advice, which notifies the retailer of product availability. This enables the retailer to be confident that consumer orders can be filled.

DIRECT STORE DELIVERY (DSD): In the highly competitive retail market it is vital that there is always stock on hand to meet consumer demand. The direct store delivery model enables a retailer to order goods for delivery directly to its stores, bypassing the retailer's distribution centers and thus shortening delivery time. This is especially important for perishable items such as produce and baked goods, when delays in shipment mean shorter shelf life. The key to this process is a section of the EDI Purchase Order that enables the buyer to specify multiple store destinations with quantities for each, all in a single document. The supplier processes the EDI Purchase Order, ships directly to each store, and sends a separate ASN for each shipment.

The key to the direct store delivery (DSD) process is a section of the EDI Purchase Order that enables the buyer to specify multiple store destinations with quantities for each.

Using EDI in the shipping and receiving processes enables both the supplying and receiving companies to compete in a business environment in which efficient delivery of goods to the right place at the right time is key to success. Also crucial to both is quick and seamless invoicing and payment.

[*With EDI*] *what previously took up to 5 days now takes a few minutes.*

Global Standards Organization[4]

Invoicing and Payments

Finance teams are increasingly focusing on streamlining the accounts payable (AP) department to achieve further cost efficiencies, improve visibility into financial performance, and reduce the risk of both internal and external

fraudulent activity. Eliminating the mountains of paper invoices received from non-EDI suppliers is clearly an important first step.

Many countries have enacted legislation that permits an electronic invoice (e-invoice) to serve as legal evidence during tax audits, removing the need to keep paper originals. In order to more efficiently collect taxes and to prevent tax avoidance, governments throughout the world, including those of Mexico, Brazil, and Denmark, have mandated the use of e-invoicing for the public sector. Within the United States, some federal agencies, e.g., the Department of Defense and the Department of Veterans Affairs, have mandated e-invoicing. Today, e-invoicing is becoming the way to do business for both governmental agencies and the private sector, whether the company is small, medium, or large.

The European Associations of Corporate Treasurers identified the average processing cost of a paper invoice across Europe to be around 30 Euro. It also determined that by using e-invoicing, an 80% cost savings is possible. Confirming this data, initial case studies also indicate that e-invoicing has proved to reduce the cost of processing one invoice to less than 5 Euros.

Global Standards Organization[5]

While e-invoicing regulations are often similar in purpose, the specific requirements frequently vary by country. For example, EDI invoices must adhere to country-specific regulations for data format, data storage, and data access requirements. Some of the legal requirements for e-invoicing that differ from one European Union member to another include: (1) Digital Signatures: some countries, such as Spain, require EDI invoices to be digitally signed (using an encrypted code) in order to guarantee their origin and integrity; (2) Archiving: many countries require the archiving of EDI invoices for extended time frames, e.g., Germany requires data archiving for ten years and the

UK requires six years; (3) VAT Compliance: VAT (Value-Added Tax) rules in Europe vary widely by country.

There are three typical models for the invoicing and payments process. The most common, particularly in the retail industry, involves the generation of a purchase order and an invoice. In the second model, an EDI Purchase Order is not generated—just an EDI Invoice. And in the third model, the reverse is true: an EDI Purchase Order is generated, but no EDI Invoice.

Companies with automated matching of invoices to POs report processing costs 36% lower than other firms.

Market Research Firm[6]

STANDARD MODEL: EDI Purchase Order and EDI Invoice: In a fully automated invoicing and payment process (see Figure 4.3): (1) the supplier's order management system processes the incoming EDI Purchase Order and, once the order is filled, (2) the accounts receivable system generates and sends an EDI Invoice. The invoice is received and processed by the buyer's accounts payable system after receipt of goods or performance of service. The AP organization reviews and approves the invoice. (3) A few days before the invoice is due, the AP team will generate an EDI Payment Order/Remittance Advice, which is sent to the buyer's bank for (4) payment via the Automated Clearinghouse Network (ACH). (5) When the supplier's bank receives payment, it generates another EDI Remittance Advice informing the supplier that payment has been made.

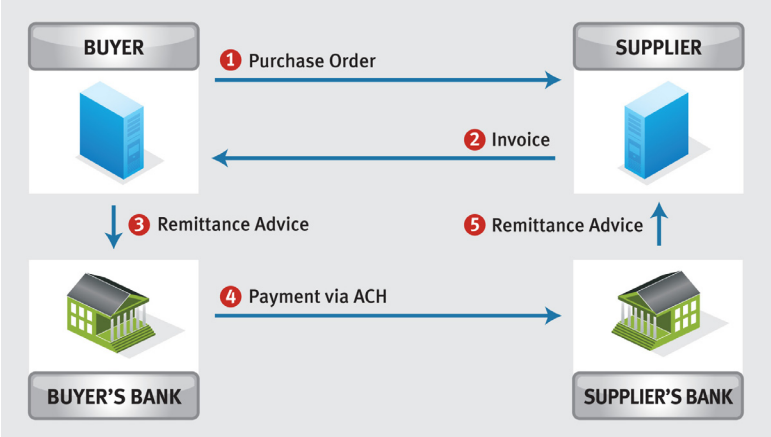


Figure 4.3: Basic Invoice & Payment Process

By using electronic processing instead of manual processing, you save on average $7.70 on PO based invoices, $7.10 on Non-PO based invoices, and $8.90 on all other invoices.

Market Research Firm[7]

NON-PO INVOICE: In some instances, particularly for services provided, there is no purchase order to start the procurement process. This may occur, for instance, when there is a long-term standing contract to provide services, such as office leasing or electrical utility services. There are two process differences from the standard invoicing process previously described. First, since there is no EDI Purchase Order, the company providing the service cannot use content from an EDI Purchase Order to generate the EDI Invoice. Thus, the EDI process begins with invoice creation by the service provider. This is commonly referred to as a "non-PO

invoice." Second, since a purchase order, which often functions as automatic pre-authorization for forthcoming invoices, was not generated, these incoming EDI Invoices must first go through a payment approval workflow process.

EVALUATED RECEIPT SETTLEMENT (ERS): The Evaluated Receipt Settlement process, which is known in Europe as Self-Billing, was pioneered in the United States by the automotive industry to streamline the procure-to-pay process with high-volume, trusted direct materials suppliers. The ERS process has since been widely adopted throughout other manufacturing sectors. In this model, once the purchase order has been received, the supplier (for example, a parts supplier in the automotive industry) fills the order and sends an ASN (Advance Ship Notice). However, no EDI Invoice is generated. Upon receipt of the shipment, the buyer matches the information from the ASN against the original purchase order and the actual goods received to automatically calculate the payment. The payment process then proceeds as in the standard model.

The internal labor cost of manually matching paper invoices to purchasing and receiving documents averages $5.22 per transaction, according to Soltec data. The estimated processing cost per invoice drops to $2.14 for organizations that have invested in automated tools such as imaging and electronic data interchange (EDI), and plummets to $.071 per invoice in enterprises with mature ERS processes in place.

AP Matters[8]

In addition to the standard buyer/supplier invoicing and payment models detailed above, other payment scenarios can leverage EDI. Financial institutions use the power of EDI to process the tens of thousands of financial transactions each day. With such volumes, EDI is crucial to

ensuring that correct payments are made to the correct accounts at the correct time. For example, businesses must make payments to suppliers, deposit payroll for employees, and issue dividends to investors. Large corporations often use EDI and other standards to instruct their banks as to when, to whom, and how to make these payments. ANSI X12 and EDIFACT are popular options for payment instructions. There are also a number of standards unique to the financial services industry. ISO 20022 XML, SWIFT MT, and MX messages are used globally. In addition, each country may promulgate unique payment instructions, such as NACHA (United States), CFONB (France), and CliOp (The Netherlands).

By using SWIFT, GE Corporation increased reliability, enhanced security and controllership, translating into 406 percent ROI.

SWIFT case study[10]

Regardless of which invoicing and payment process is used, both the buyer and the supplier realize benefits from using an EDI-based approach. The benefits to the buyer include:

REDUCED COSTS: Companies that have automated their accounts payable process have realized major cost savings. For example, invoice processing costs can be reduced by as much as 80 percent with the elimination of sorting, registering, and manual data entry.[9]

Per Employee in the AP Department, typically just 5,000 –15,000 paper invoices can be processed per year. Therefore, the direct staff costs in the AP department already vary between 5–15 Euros per invoice. Further costs are generated in the paper-based workflow and archiving. Analysis in some organisations showed that on average 6 invoice copies are generated and archived decentralised in the files of the secretaries and heads of departments.

E-invoicing/e-billing Consulting Firm[11]

IMPROVED CASH MANAGEMENT AND RISK MANAGEMENT: Real-time access to invoices and improved accuracy enable a company to better predict outbound disbursements and cash flow. In addition, e-invoicing programs typically result in fewer duplicate payments, payment penalties, and overpayments.

MAXIMIZED DISCOUNTS: EDI invoicing enables a company to process and approve invoices more quickly, enabling a business to take full advantage of timely payment discounts, such as a two-percent discount for payment within ten days of invoice receipt or other prorated discount schedules.

In larger organisations, it is not unusual to benefit from an additional 1.5 Euro discount per E-Invoice on average.

E-invoicing/e-billing Consulting Firm[12]

IMPROVED RELATIONSHIPS WITH SUPPLIERS: Faster, more accurate payments to suppliers result in the ability to forge more strategic relationships and ensure better customer service.

The benefits to the supplier include:

FASTER PAYMENTS: E-invoicing eliminates mail delays and customers can easily route invoices for faster approval and processing since electronic invoices can automatically pass into the customer's invoice approval workflow system. Invoices are less likely to get lost and there are fewer exceptions. As a result, invoices can be paid in a timelier manner.

Companies using more electronic connections with customers have 13 percent shorter days sales outstanding (DSO).

Market Research Report[13]

REDUCED COSTS: Companies that have automated their accounts receivable process have realized major cost savings due to savings in postage, materials, processing, and storage. Further savings result from a reduction in reprint requests and customer service calls. In addition, electronic invoices enable the implementation of a fully electronic payment system, thereby eliminating the costly processing of paper checks.

INCREASED PRODUCTIVITY: Utilizing electronic delivery of invoices, suppliers can verify that buyers have received their invoices and the time and date of receipt, thus reducing the need for status calls.

* 5 * 5 * 5 *

WHAT DOES AN EDI DOCUMENT LOOK LIKE?

In this chapter, you will learn:

☞ *How EDI documents are constructed from data elements, segments, and envelopes*

AN EDI DOCUMENT needs to contain all the information that would be in the paper document of the same type. For example, in a purchase order you need to specify your company name, address, phone and fax numbers, and the products you wish to purchase, the quantity of each product, dates for delivery, and so on. In an EDI document, each individual piece of information is called a "data element." We call each line of data elements a "segment." A single EDI business document such as a Purchase Order, Invoice, or Advance Ship Notice is called a "transaction set" or "message."

What makes the EDI document different from an email is that each data element is in a specific position on a specific line or segment. For example, if the EDI rule is that your company's address will always be found after the first asterisk on a segment that begins with the code "N3," any EDI computer program in the world can now

The beauty of an EDI document is that it has rules for doing virtually everything, no matter how complicated the information or the business process.

theoretically find your address by simply looking for a segment beginning with "N3" and reading after the first asterisk. Obviously, documents can be very complex. For example, how do you indicate multiple addresses for multiple locations? That's where the beauty of an EDI document comes in. It has rules for doing virtually everything.

When you create an EDI document such as a Purchase Order, you must adhere to the strict formatting rules of the standard you are using, such as ANSI X12 or EDIFACT. These rules define exactly where and how each piece of information in the document will be found, that is, in which segment and in what position within that segment. In this way, when the EDI translator on the receiving computer reads an incoming EDI Purchase Order, it will immediately know where to find the buyer's company name, the purchase order number, the items being ordered, the price for each item, and so on. The data will then be fed into the receiver's order management system in the proper internal format without requiring any manual order entry.

Figure 5.1 shows a sample paper purchase order and how it would look after translation into the ANSI X12 EDI format and EDIFACT EDI format respectively.

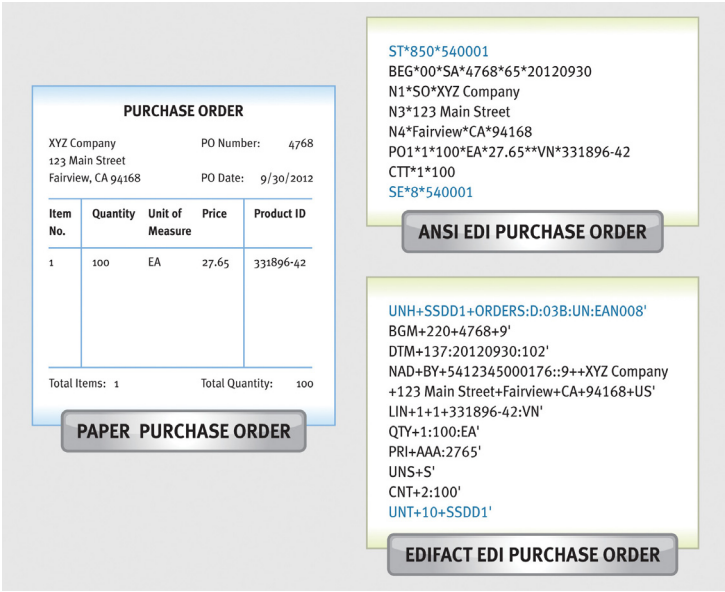


Figure 5.1: Sample Paper Purchase Order

Data Elements

The EDI standard sets the rules for the type and format of each data element in a document. For example, the data type might be numeric for the quantity of goods ordered, alphanumeric for your address, and date format for the delivery date. The standard also provides codes that indicate the format or types of certain data elements. For example, because businesses today trade in a global economy, it is necessary to have a code to indicate the currency associated with any data elements expressing prices or costs.

One code can indicate that prices are expressed in U.S. dollars, another in Euros, another in yuan, and so on.

Segments

If you were filling out information on a purchase order, you would expect to see groups of related data. For example, see Figure 5.2, which shows a paper purchase order in which only one item is being ordered. Note that there are four sections, each providing a different set of information:

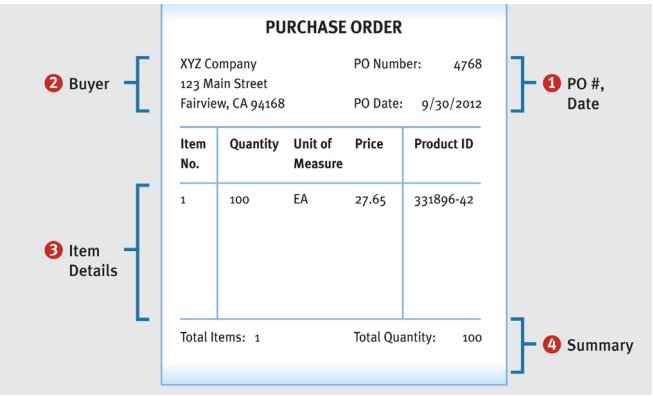


Figure 5.2: Purchase Order Sections

In an EDI document, each section is described by one or more segments; each segment consists of one or more data elements. Each segment begins with a segment identifier (e.g., ST, BEG, N1, in ANSI; UNH, BGM, DTM in EDIFACT) that describes the type of data elements that follow. The data elements within each segment are separated by a data element separator, such as an asterisk(*) or a plus sign(+).

➔The ANSI X12 document for the above XYZ purchase order would look like this. (The numbers (1) to (4) correspond to the numbered sections in Figure 5.2.)

ST*850*54001	ST, to indicate start of a transaction set—in this case the 850 purchase order
BEG*00*SA*4768*65*20120930	BEG, to indicate the beginning of the PO, specifically **(1)**
N1*SO*XYZ Company	N1, a name segment **(2)**
N3*123 Main Street	N3, to provide street address
N4*Fairview*CA*94168	N4, to provide city/state/zip
PO1*1*100*EA*27.65** VN*331896-42	PO1, to provide line item detail **(3)**
CTT*1*100	CTT, to provide summary data for the PO **(4)**
SE*8*1001	SE, to indicate the end of the PO

➔The EDIFACT document for the above XYZ purchase order would look like this:

UNH+SSDD1+ORDERS:D: 03B:UN:EAN008'	UNH, to indicate start of message—in this case "ORDERS"
BGM+220+4768+9'	BGM, to indicate the beginning of the PO message
DTM+137:20120930:102'	DTM, to indicate the date/time period **(1)**
NAD+BY+5412345000176::9 ++XYZ COMPANY+ 123 Main Street+ Fairview+CA+94168+US'	NAD, to identify the buyer code corresponding to the name/address **(2)**

LIN+1+1+331896-42:VN'	LIN, to describe line item detail **(3)**
QTY+1:100:EA'	QTY, to define the quantity
PRI+AAA:2765'	PRI, to define price
UNS+S'	UNS, section control segment to separate line item detail from summary information
CNT+2:100'	CNT, to provide the number of line items **(4)**
UNT+10+SSDD1'	UNT, to indicate the end of the PO

For each type of business document, the EDI standard defines:

- The segments that may be included and whether they are mandatory, optional, or conditional (conditional segments can be included only if another segment or data element is included);
- For each segment, the data elements that may be included (for each piece of information on a paper document there is a corresponding EDI data element); these data elements are defined in the standards dictionary and each standard has its own dictionary;
- The required sequence of the segments and data elements; and
- How many times a segment or group of segments (loop) may be repeated.

Envelopes

Once all the segments are assembled according to a prescribed sequence, they form a complete electronic document or "transaction set."

There are times when a business may need to send just one document to a business partner and other times when it may need to send hundreds. EDI provides a way of sending either one or multiple documents destined for one trading partner in a single file. We call this concept "enveloping" because it's just like taking paper purchase orders, stuffing them into an envelope, and sending them through the mail.

EDI provides a way of sending either one or multiple documents destined for one trading partner in a single file. We call this concept "enveloping."

The EDI envelope is called an "interchange envelope." It includes a segment that precedes all the documents and a segment after all the documents. These envelope segments contain the identification of the sender and the receiver, the date and time of the transmission, totals that enable the receiving computer to verify that it has received the correct number of documents, and other information that is needed by the receiving EDI program to process the data elements. Figure 5.3 shows the XYZ purchase order in an ANSI and EDIFACT EDI interchange envelope ready for transmission.

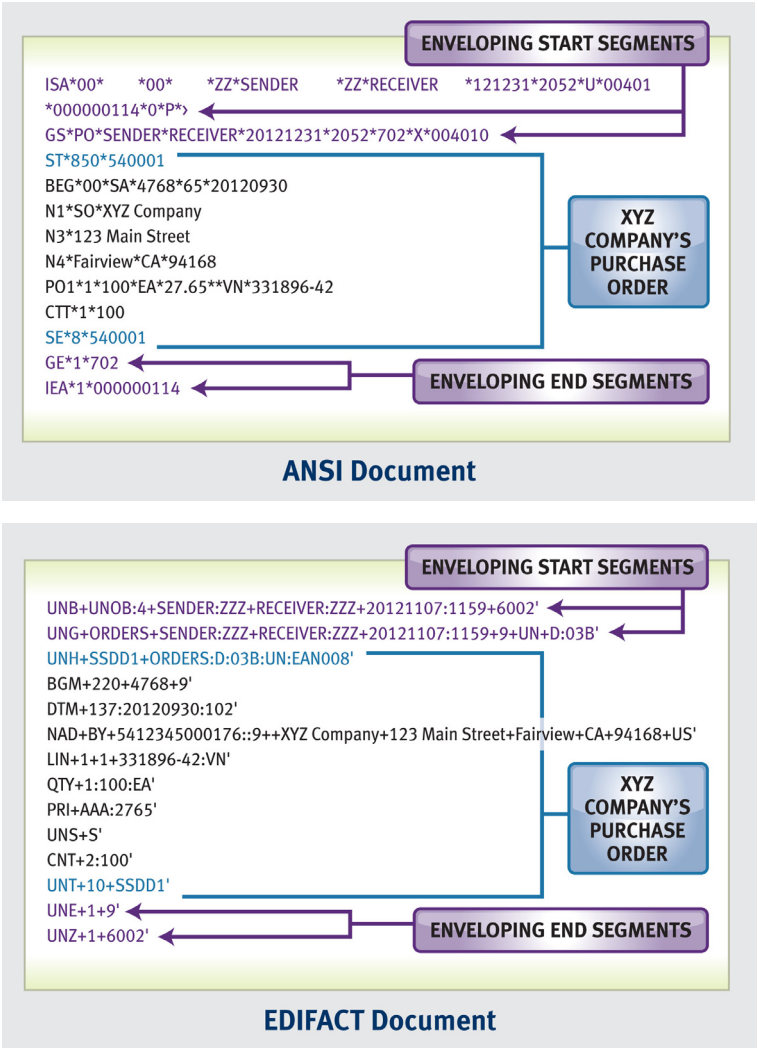
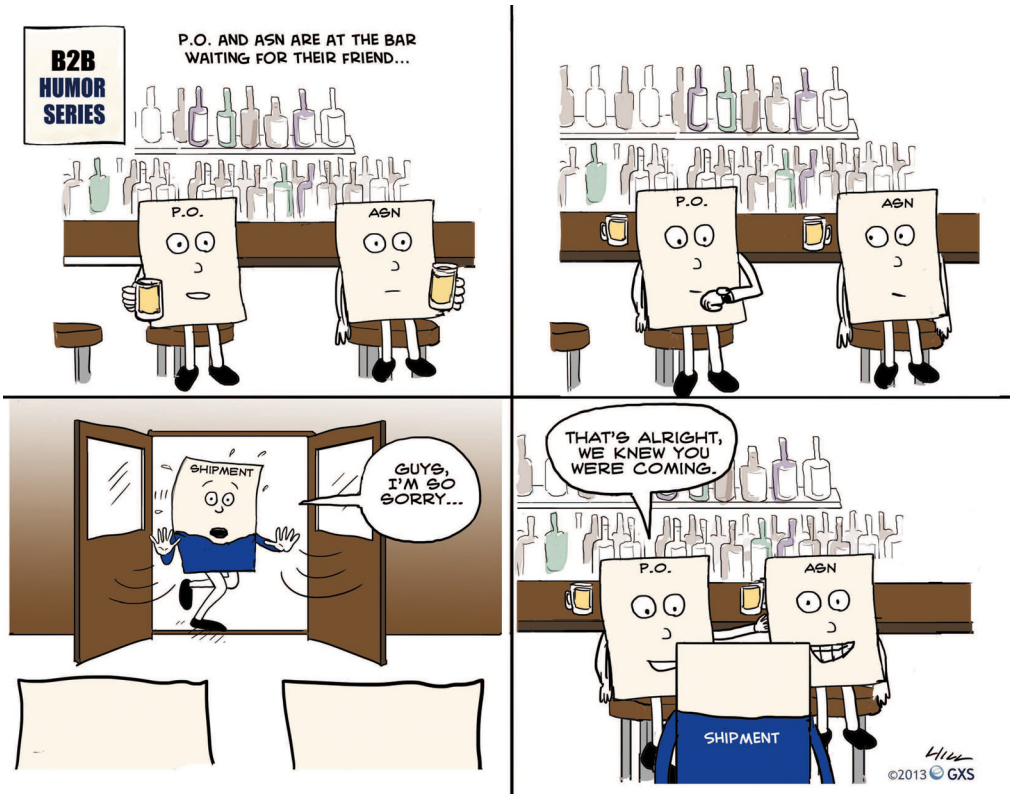


Figure 5.3: EDI Purchase Order with Enveloping

This chapter is intended to provide the rudimentary concept of what an EDI document looks like. Because EDI is so powerful, it is much more complex. There are, for example, layers of enveloping, types of data segments, and groups of data elements that have not been described here, but are subjects with which the EDI specialist needs to be familiar.


B2B
HUMOR
SERIES
P.O. AND ASN ARE AT THE BAR WAITING FOR THEIR FRIEND...
P.O.
ASN
P.O.
ASN
SHIPMENT
GUYS, I'M SO SORRY...
THAT'S ALRIGHT, WE KNEW YOU WERE COMING.
P.O.
ASN
SHIPMENT
©2013 GXS

* 6 * 6 * 6 *

HOW DOES A COMPANY IMPLEMENT AN EDI PROGRAM?

In this chapter, you will learn:

- ☞ *What is involved when you perform all EDI implementation tasks yourself*
- ☞ *What is involved when you outsource many EDI implementation tasks*
- ☞ *How three major companies implemented their EDI programs*

MANY COMPANIES need to implement EDI in order to satisfy the requirements of valued customers. For example, Chrysler mandates that its suppliers must either implement a fully integrated EDI solution or, for smaller-volume suppliers, use web-based forms or a service bureau that will generate EDI documents on their behalf. After complying with such a business partner's EDI requirements, a company often sees the potential benefits of instituting its own EDI program with its broader trading community.

If your company has decided to implement EDI as part of a strategic initiative to cut costs and improve efficiency or in order to become easier for customers to do business with, you need to determine whether to do it yourself, outsource it all to a B2B Managed Services Provider, or use a combination of the two approaches.

Do-It-Yourself Model

In order to make a decision as to which of the above three models best fits your company's needs, you need to appreciate the level of effort required to set up a do-it-yourself EDI program. Some companies, such as Walmart, have decided upon the do-it-yourself approach as part of their strategic decision to have complete control over every aspect of their business.

Tasks in the do-it-yourself model:

1. Develop the organizational structure;
2. Conduct in-depth analysis;
3. Develop EDI system requirements;
4. Acquire the EDI infrastructure;
5. Implement the technical solution;
6. Rollout the program to your trading partner community;
7. Manage and maintain your EDI program.

Below is an overview of the major tasks that need to be completed for a successful EDI implementation.

(1) Develop the organizational structure

EDI is a significant investment and developing the correct organizational structure from the outset will pay dividends as the program evolves. Some of the key elements of the structure include:

- **EDI Coordinator**: An IT professional with in-depth experience in delivering EDI. The coordinator may come from in-house or be hired externally depending on the EDI resources of the organization.

- **Steering Committee**: Headed by the EDI Coordinator, this committee typically consists of the department heads of affected business units, the head of IT, and legal representatives.
- **Senior Management Sponsor**: As with any major IT program, senior management commitment is critical if the EDI implementation is to be a success.
- **Dedicated EDI Team**: The EDI team will be responsible for the actual implementation of the system.

Ongoing communication is vital for educating the various organizations within your company as to how the EDI program will benefit them and impact their processes.

An important aspect of the role of the EDI coordinator is to regularly communicate with all sectors of the company that will be affected by the EDI program in order to ensure their support and buy-in. This ongoing communication is vital for educating the various organizations as to how the EDI program will benefit them and impact their processes.

(2) Conduct in-depth analysis

This analysis identifies the most likely corporate applications and documents for EDI deployment and sets priorities for conversion to EDI. To this end, factors to be considered include the number of suppliers, customers, or other trading partners, and the volume and type of transactions to be exchanged. It includes a description of the present systems in each functional area and an explanation of how EDI will improve them.

The generation and receipt of each type of business document is based on a system of human and machine procedures, all of which must be documented and analyzed for EDI efficiencies. For best results, the goal should be to improve the business cycle, rather than simply automate it.

(3) Develop EDI system requirements

The result of the previous analysis step provides an organization with the knowledge to develop a comprehensive specification for the EDI system. This includes: (1) the volume of expected EDI traffic and the IT infrastructure needed to support it; (2) the capacity of the internal network infrastructure to support EDI data; (3) the network connections needed to manage traffic with trading partners; (4) the programming required to ensure that internal systems comply with the data required by trading partners and with EDI standards; and (5) the amount of customizing required to integrate the internal and EDI systems.

A key element of the design of your EDI system is selection of the communications model that best meets your needs:

Do-it-yourself

or

EDI Network Services Provider

With this information, EDI system design can begin. A key element of this design is selecting the communications model that best meets your needs. Although companies may choose to implement the do-it-yourself approach, most still choose to use the services of an EDI Network Services Provider to connect to all or some of their business partners. In Chapter 3 we discussed the reasons for electing to leverage an EDI Network Services Provider. But it's important to recognize that not all Providers are the same.

Some considerations for selecting the right one for your company include:

NETWORK REACH: How many of your trading partners already use that particular Provider? Does that Provider have a strong presence in your industry? Does that Provider have a global presence, not only for the exchange of documents, but also for providing local customer support?

PRICING STRUCTURE: EDI Network Services Providers offer various pricing structures, including pay-as-you-go and monthly or annual subscriptions. Most Providers calculate the charge based on the number of kilo(thousand)-characters (KCs) within a document. Other factors that impact the price may include the number of trading partners to be implemented, special requirements such as local language support for international partners, and the length of the commitment period.

NETWORK VIABILITY: Does the Provider's network have a proven track record and is it likely to be around for the foreseeable future? Does it provide disaster recovery and the capacity to handle peak loads without degradation of service?

Not all EDI Network Service Providers are the same. Quite often, the value-added services provided are more important than the cost.

VALUE-ADDED SERVICES OFFERED: This includes services such as automatic rejection of documents with bad data before they reach your system, the ability for your line-of-business personnel to inde-

pendently obtain data and reports on demand, and the ability to view the status of your business transactions at all stages in the supply chain. Quite often, these value-added services are a more important factor in your decision than is cost.

(4) Acquire the EDI infrastructure

EDI infrastructure requirements may include:

- Dedicated server
- Communications software
- EDI translation software
- Personnel with EDI and communications expertise

Now that your requirements have been defined, it will be necessary to purchase any hardware or software needed to support your EDI solution. This often entails the purchase of a dedicated server, particularly if you will be using the AS2 communications protocol. You will also need to acquire the communications software and the EDI translation software. The translation software creates an EDI document from your internal data and also converts incoming EDI documents into your internal data format. When selecting an EDI translator, you should be aware that features vary in terms of efficiency in handling large volumes of documents, reporting capabilities, mapping tools for the correlation of your in-house data formats to the EDI format, ERP integration features, and others. You need to select the EDI translator that is right for your business. And most important, you must have the proper personnel resources to implement and maintain the system. This may require the hiring of new personnel with expertise in communications and EDI.

(5) Implement the technical solution

After purchasing the necessary hardware and/or software to support your EDI solution, a skilled EDI programming staff must next convert the requirements into reality. The staff must be fully knowledgeable of EDI standards, in-house systems, and communications protocols. The basic tasks that need to be performed include: (1) integrating EDI with your in-house business systems, which means extracting and loading data; (2) creating the EDI documents by mapping (correlating) the extracted data to the proper segments and data elements of the EDI transaction set, as well as providing the enveloping and other necessary data; and (3) installing and configuring the communications software for sending and receiving documents. Each of these processes can be very complex, particularly when you have many trading partners each with its own requirements. That's why a good, technically skilled staff is essential.

Technical implementation tasks include:

- Integration with in-house systems
- Mapping
- Communications software installation and configuration

(6) Roll out the program to your trading partner community

If you are the initiator of the program with your business partners—for example, you want all your suppliers to be able to receive your purchase orders via EDI and to return EDI Invoices—you must have the skilled resources to develop, manage, and maintain an EDI rollout program to your supplier community. This includes: (1) surveying your community to understand each supplier's level of EDI readiness; (2) developing and implementing a com-

munity communication plan to convey your program goals and provide the education needed; (3) offering various EDI options such as web-based forms or Excel-based forms for those suppliers that are not ready to integrate EDI with their back-office systems; and (4) supporting each supplier through the start-up process.

EDI programs must continually change to meet your evolving business requirements. You may add EDI document types, add EDI partners, or change communications settings. Be prepared with the skilled personnel required to handle these changes.

(7) Manage and maintain your program

You will need to invest in skilled personnel for the ongoing management of your EDI program in order to:

- Monitor and troubleshoot communications and data issues to ensure documents continue to flow;
- Respond to inquiries from trading partners 24x7 as issues arise;
- Report on trading partner activity and system usage; and
- Make updates to translation maps and/or communications protocols as you or your partners add new documents, make changes to current documents, or upgrade their communications processes.

B2B Managed Services Model

The alternative to the do-it-yourself approach is to use the services of a B2B Managed Services Provider that provides expertise, technical infrastructure, and program and process support on your behalf. With a B2B Managed Services approach you offload all the day-to-day operations of your

EDI program to a third party who provides all the services needed, including:

- Integration with your in-house systems;
- Connectivity and protocol mediation with all your trading partners (your customers, suppliers, logistics providers, financial institutions);
- Data translation to and from your document format and the document format of your trading partners;
- Working with each trading partner to fully integrate their processes with yours, including setup, testing, communications monitoring, and 24x7 Help Desk support for you and your trading partners;
- Community rollout and enablement services; and
- Reporting of trading partner activity and system usage.

Implementing Managed Services has really improved our business. For example, one prerequisite of conducting business with Amazon is to be able to exchange every type of document electronically. Even with Amazon using EDIFACT, the scale of the task would have been impossible to achieve internally. It was achieved quickly and effectively with Managed Services. There has been an incredible improvement in our ability to conduct B2B e-commerce. It has had a great result for my team.

IT Project Manager at Esprinet SPA[1]

With B2B Managed Services, you no longer need to manage and/or purchase upgrades to your B2B hardware and software. In addition, if you already have an in-house EDI program in place, then moving to a B2B Managed Services approach enables you to redeploy the personnel currently assigned to the EDI program to support other business needs.

Typically, you pay an up-front implementation fee and then an ongoing monthly fee that is based upon the volume of your EDI document transactions.

How Three Companies Implemented EDI

Now, let's briefly look at three companies that have taken different approaches with their EDI program: Walmart, which has opted for the do-it-yourself approach; Godiva Chocolatier, the B2B Managed Services approach; and Mitsubishi Motors, a combination of the two.

WALMART runs its own EDI program. Its overall business strategy for maintaining its place as the number one retailer in the world is to provide products at an "everyday low price" with the greatest customer satisfaction. To this end, Walmart began as early as the 1980s to exchange EDI business documents with its suppliers. It views EDI and its relationship with its suppliers as critical for ensuring that it can offer goods at the lowest price. Walmart suppliers must either connect directly to Walmart via the AS2 communications protocol for the exchange of EDI documents or use Walmart's web-based interface. In rare cases, Walmart permits suppliers to use approved third-party EDI Network Services Providers.[2] Because of its huge size, Walmart has ample resources to pay for and manage an EDI program with its hundreds of thousands of suppliers.

GODIVA CHOCOLATIER outsources its EDI program to a B2B Managed Services Provider. After divesting from the Campbell Soup Company in 2007, Godiva

needed to make the transition away from Campbell's with minimal disruption to current business operations while ensuring its IT systems and staff could support a growth strategy that included expansion into new global markets and channels, along with new, innovative product introductions. Godiva determined that the best course of action would be to outsource the management of its entire EDI operations to a trusted B2B Managed Services Provider, thus empowering Godiva to focus on core competencies and other key business initiatives. Using B2B Managed Services, Godiva was able to double the number of trading partners in its retail channel within a three-year period, an otherwise near impossible feat with its prior systems. Today, using B2B Managed Services helps Godiva support a very diverse and complex network of global trading partners, which includes customers, suppliers, brokers, distributors, warehouses, catalogs, and carriers.[3]

MITSUBISHI MOTORS uses a combination of the do-it-yourself and B2B Managed Services approaches. Headquartered in Tokyo, the company is a leading manufacturer and distributor of cars and replacement parts. Its automobiles are manufactured throughout the world and its products are sold virtually worldwide. Mitsubishi had been exchanging

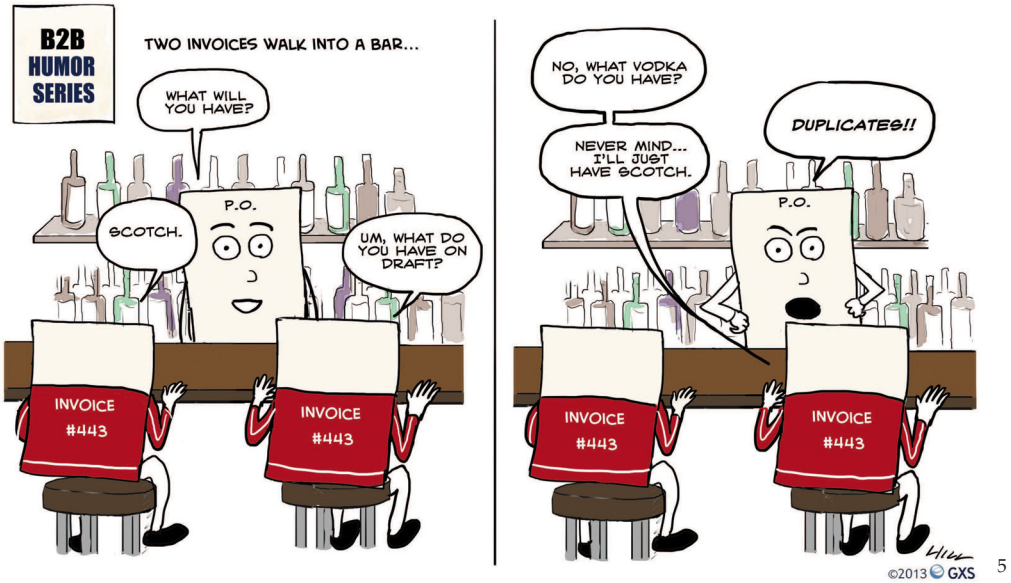
> a massive amount of transaction-based information daily between its offices in Japan and abroad, as well as with a significant number of business partners around the world. Mitsubishi realized it would continually need to add resources to maintain the company's EDI processes and to keep up with standards complexity as more trading partners joined its network. For this reason, Mitsubishi decided to leverage a B2B Managed Services Provider who could provide global support to complement its own EDI program and improve its efficiency and reach. At first, Mitsubishi Motors used B2B Managed Services to support transactions with trading partners in Germany and France. Now, with B2B Managed Services, Mitsubishi Motors has boosted its capabilities significantly and achieved stronger integration with its suppliers throughout all Europe without making additional investments in headcount or licensed software.[4]

Of course, no two companies' business needs are identical. A solution that meets the needs of one company may not work for another. But one of these three general approaches can be tailored precisely for the challenges that your company must meet in order to adapt, grow, and excel in today's ever-evolving business environment.

All companies now have the opportunity to trade electronically with 100 percent of their trading partners.

Easy-to-use options are available that eliminate earlier barriers to full participation by small and medium-size trading partners. These options include customized web-based forms and direct integration with Excel or other accounting software. All companies, big and small, can now realize the benefits of using EDI as a core technology component in streamlining their procurement, receiving, invoicing, and payment processes. Moreover, these Internet-based options are available worldwide. Therefore, companies that want to leverage emerging markets can now utilize EDI to communicate electronically everywhere in the world, despite the complexities of different time zones, regulations, and languages.

In the foreword to this book, we used the example of a company in Detroit, Michigan that uses EDI to exchange business documents with its suppliers in Japan and Brazil virtually instantaneously. If your business wants to be able to compete successfully with a company like that—one that has an integrated B2B e-commerce program—then now is the time to begin the conversation about implementing EDI in your company. We hope that after reading this book, you are better prepared to participate in that discussion.


B2B
HUMOR
SERIES
TWO INVOICES WALK INTO A BAR...
WHAT WILL YOU HAVE?
SCOTCH.
P.O.
UM, WHAT DO YOU HAVE ON DRAFT?
INVOICE #443
INVOICE #443
NO, WHAT VODKA DO YOU HAVE?
NEVER MIND... I'LL JUST HAVE SCOTCH.
DUPLICATES!!
P.O.
INVOICE #443
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NOTES

Chapter 1

1. "Global Premium Apparel Manufacturer Successfully Implements ASNs and e-Invoicing with More than 2,000 Small- and Medium-Sized Customers," GXS, accessed July, 2013, http://www.gxs.com/cs-apparelmanufacturer
2. GS1 UK, "EDI Cost Savings Report," 2010.
3. GXS, "The Benefits of EDI," 2011.
4. See note 2 above.
5. Wayne W. Eckerson, "Data Quality and the Bottom Line: Achieving Business Success through a Commitment to High Quality Data," The Data Warehousing Institute, 2002.
6. Duncan Jones, "The Forrester Wave™: eProcurement Solutions," Forrester, 2011.

7. "Global Home Improvement Retailer Uses GXS Active Logistics℠ to Obtain Real-Time Visibility of Import Shipments," GXS, accessed July, 2013, http://www.gxs.com/cs-homeimprovementretailer
8. "EDI Basics Website," GXS, accessed August, 2013, http://www.edibasics.co.uk
9. "Chrysler Group LLC," GXS, accessed August, 2013, http://www.gxs.com/cs-chrysler
10. Personal communications with GXS customers.
11. "Bernard Matthews Hatches Supply Chain Success with Tradanet®," GXS, accessed August, 2013, http://www.gxs.com/cs-bernardmatthews
12. AMR Research, "Benchmarking B2B E-Business: The Value Is in There," 2007.
13. "Daniels Group," GXS, accessed August, 2013, http://www.gxs.com/cs-danielsgroup
14. See note 11 above.

Chapter 2

1. GS1 UK, "EDI Cost Savings Report," 2010.
2. AMR Research, "Benchmarking B2B E-Business: The Value Is in There," 2007.
3. "B2B/EDI Humor Cartoon Series," Mark Hill, Hill Cartoons (Illustrator), Peter Corliss, GXS (Writer), ©2013 GXS, Inc.

Chapter 3

1. "NXP," GXS, accessed August, 2013, http://www.gxs.com/cs-nxp
2. See Chapter 2, note 3.

Chapter 4

1. GXS, "B2B-Commerce Adoption across the Global Steel Industry," 2008.
2. "Organic Farm Foods Makes Healthy Savings Trading Electronically," GXS, accessed August, 2013, http://www.gxs.com/cs-organicfarmfoods
3. GS1 UK, "EDI Cost Savings Report," 2010.
4. Ibid.
5. Ibid.
6. Scott Pezza, "Invoicing and Workflow: Integrating Process Automation to Enhance Operational Performance," Aberdeen Group, 2011.
7. GXS, "The Benefits of EDI," 2011.
8. Al Holzinger, "ERS: World without Invoices?" *AP Matters*, 2/2010.
9. Gartner Research, "The E-Invoicing Steamroller Finally Picks Up Speed," 2009.
10. "GE Corporate Treasury Moves to Global Banking Industry Solution SWIFTNet — 406% ROI to Be Realized." Swift, accessed July 2013, http://

www.swift.com/assets/corporates/documents/our_solution/case_study_ge.pdf

11. Bruno Koch, "E-invoicing/E-Billing: The Catalyst for AR/AP Automation," Billentis, 2013.
12. Ibid.
13. AMR Research, "Benchmarking B2B E-Business: The Value Is in There," 2007.

Chapter 5

1. See Chapter 2, note 3.

Chapter 6

1. "Esprinet," GXS, accessed July, 2013, http://www.gxs.com/cs-esprinet
2. "Walmart Chooses Internet Protocol for Data Exchange," *Computer World*, Sept. 16, 2002; "Walmart Stores, Inc. Getting Started with EDI Implementation Guideline Document version:1.0 Published November 2011," http://az204696.vo.msecnd.net/download/33531/getting-started-with-wal_mart-edi_129954166278575666.pdf
3. "Godiva Chocolatier," GXS, accessed August, 2013, http://www.gxs.com/cs-godiva
4. "Mitsubishi Motors Uses GXS Managed Services to Support Global Trading Partner Network," GXS, accessed August, 2013, http://www.gxs.com/cs-mitsubishi
5. See Chapter 2, note 3.



A TRUE B2B ENTHUSIAST, Rochelle Cohen has spent nearly 30 years learning the ins and outs of the EDI industry. She has followed the trends and developments as the industry has matured and evolved.

Rochelle focuses on product and content marketing for many of GXS's offerings, including B2B managed services, messaging services, community enablement, as well as visibility and data quality services. She managed GXS's EDI implementation services organization and developed educational and marketing materials for purchasing, invoicing, and logistics solutions.

Through the years, Rochelle has gained extensive expertise and insights into meeting the challenges of all types of B2B e-commerce rollout programs. This *EDI Basics* book provides Rochelle with an opportunity to convey that knowledge. Going beyond theory, Rochelle's book offers tips and best practices for implementing B2B programs. *EDI Basics* provides readers with the information necessary to make strategic and operational decisions about their B2B programs.

ADDITIONAL INFORMATION and resources, such as case studies, reference materials, glossary, tutorials, sample RFPs, and frequently asked questions, can be found on the following local language EDI Basics sites:

United States	http://www.edibasics.com
UK	http://www.edibasics.co.uk
Brazil	http://www.edibasics.com.br
China	http://www.edibasics.cn
France	http://www.edipourtous.fr
Germany	http://www.edileitfaden.de
Hungary	http://www.edibasics.hu
The Netherlands	http://www.edibasics.nl



is a leading B2B integration services provider and operates the world's largest integration cloud, GXS Trading Grid®. GXS software and services help more than 550,000 businesses, including 22 of the top 25 supply chains, extend their partner networks, automate receiving processes, manage electronic payments, and improve supply chain visibility. GXS Managed Services, a unique approach to improving B2B integration operations, combines GXS Trading Grid® with process orchestration services and a global team to manage a company's multi-enterprise processes. Based in Gaithersburg, Md., GXS has direct operations in 20 countries, employing more than 2,800 professionals. To learn more, see http://www.gxs.com, read the GXS blogs at www.gxsblogs.com, or follow GXS on Twitter at twitter.com/gxs.

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In today's business environment, Electronic Data Interchange (EDI) remains a game-changer across all industries, including retail, banking, manufacturing, high-tech, and services.

For many companies it has become the lifeblood driving down costs, and increasing customer satisfaction. It is the means by which they can differentiate themselves from their competition. Using EDI, a manufacturer in Detroit, Michigan can send a purchase order to its supplier in Japan, receive an electronic document that the item is out of stock, and immediately react by sending the purchase order to an alternative supplier in Brazil—all in just minutes. This high level of visibility that is enabled by the use of EDI is critical to business success. *EDI Basics* introduces you to this electronic way of doing business so that you can participate knowledgeably in the conversation at your company about moving away from the old, manual process. This book answers the questions: What is EDI? How does it work? What does it take for your company to get started?



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