



The Benefits of EDI

Electronic Data Interchange (EDI)—the computer-to-computer exchange of standard business documents in electronic format between two companies—has been in use since the late 1960s and the benefits have consistently proven to be dramatic. Furthermore, the benefits of EDI continue to grow as it forms the foundation that enables companies to benefit from fully automated business processes such as e-procurement, e-invoicing, automated receiving and e-payment.

“Firstly, efficient B2B integration translates directly into customer satisfaction levels and leads to better relations with customers. Secondly, B2B allows us to optimize certain very important internal business processes—for example, by removing the possibility of manual errors in such processes. Thirdly, B2B lets us harmonize key processes across the world, independent of geographic region. This means that the customer will enjoy consistency, no matter where they are located, which is very significant for a global brand such as Infineon.”

—DR. DIMITRI BORTNIK,
HEAD OF B2B, INFINEON

Most large companies have implemented an EDI program. Yet only a few have fully exploited the business benefits to be gained by B2B e-commerce technologies. Many companies implemented EDI with a subset of trading partners or business processes. In recent years there has been a spike in interest among companies that are considering renewed investment in EDI programs. Supply chain managers and IT professionals are asking:

- What are the benefits of connecting to the 50% of my trading partners that are not using EDI today?
- Is it feasible to EDI-enable all of my trading partners, regardless of size or technology capability?
- Can EDI be utilized effectively abroad in emerging markets or developed nations?
- Given I have already invested in EDI, can I maximize this investment by extending my use of EDI to new business processes/business needs?
- What is the ROI from digitizing not only purchase orders and ship notices, but also invoices and remittance advice documents as well?

Fundamentally, EDI enables organizations to remove cost and inefficiency from 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 secure and sent to or received from trusted trading partners; can be tracked in real-time; and can be audited after the event.

Research analysts have published the results of annual benchmark studies conducted over many years, repeatedly demonstrating that EDI:

- **Lowers transaction costs by at least 35%**—because paper documents are replaced by EDI transactions, expenses associated with paper, printing, reproduction, storage, filing, postage and document retrieval are all reduced or eliminated.
- **Improves data quality, delivering at least a 30%–40% reduction in transactions with errors**—EDI eliminates errors resulting from illegible handwriting, lost faxes/mail and keying and re-keying errors.
- **Speeds up business cycles by 61%**—EDI transactions are exchanged in minutes instead of the days or weeks associated with postal mail. Furthermore, significant time is saved from the elimination of data re-keying and its high error rate that results in time-consuming corrective actions.

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

This paper will review the inefficiencies of manual and semi-automated processes and highlight the tactical and strategic benefits that EDI has been enabling for the past 40+ years and is continuing to enable within the procurement, receiving and invoicing processes.

EDI BENEFITS:

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- Improves data quality, delivering at least a 30%—40% reduction in transactions with errors
- Speeds up business cycles by 61%

AVERAGE PAPER REQUISITION-TO-ORDER COSTS:

North America, \$37.45
 EMEA, \$42.90
 APAC, \$23.90

EDI REQUISITION-TO-ORDER COSTS:

North America, \$23.83
 EMEA, \$34.05
 APAC, \$14.78

Source: "A Comparison of Supplier Enablement around the World," Aberdeen Group, April 2008

Benefits of EDI in Procurement

In an on-going effort to reduce costs, realize a shorter buying cycle, increase accuracy and improve productivity, companies have traditionally first focused on the "low-hanging fruit" of automating the procurement process. EDI has helped companies achieve these significant benefits over the past 40 years with automated purchase orders (POs). See Figure 1 for a comparison of the steps in a typical manual/semi-automated purchase order creation process to one that is EDI-based. Note that a 4-step process is reduced to two steps.

Manual/Semi-Automated PO Creation	Automated PO Creation with EDI
1 Enter information into ERP/procurement system to generate a purchase order	1 Enter information into ERP to generate a purchase order
2 Print purchase order	2 Send EDI purchase order to supplier
3 Fax, e-mail or mail purchase order to supplier	N/A
4 Call supplier to ensure receipt of purchase order	N/A Automatically receive functional acknowledgment confirming receipt or, if using value-added network (VAN) service, check receipt date and timestamp on the portal

Figure 1: Manual vs. EDI-Based Purchase Order Creation

According to Aberdeen Group research, 84% of best-in-class companies send electronic purchase orders, this being one of the key contributors to having lower requisition-to-order costs of \$9/order and shorter requisition-to-order cycles of 2.6 days/order.

GXS CUSTOMERS REPORT BENEFITS

- 3Com calculates cost of processing an order manually at \$38 compared to \$1.35 to process using EDI.
- Daimler-Chrysler reduced a key cycle time by 97%—a 30-day process was reduced to 24 hours.
- Major retailer reduced order cycle time by 75% from 24 days to 6.

Many benefits of EDI are in the procurement process:

- **Automated PO Exchange**—Significant cost savings can be achieved simply through the digital transmission of an EDI purchase order from buyer to supplier. First, electronic delivery avoids the need for the buyer to either phone or print and send the purchase order via fax, email or postal mail. Thus, cost savings are realized from the elimination of postage, paper, and the personnel time to copy, store, stuff and mail envelopes or feed the fax machine. Also, errors due to illegible faxes, lost orders or incorrectly taken phone orders are eliminated, saving personnel from rework activities, disputes resulting from inconsistent data and compliance checks. Furthermore, because suppliers receive electronic orders in less time, they can fulfill them faster.
- **Reduced Status Inquiries**—Without specific acknowledgement of order receipt and acceptance, personnel involved in merchandising, manufacturing and sales cannot effectively plan marketing activities, production schedules or customer deliveries. This often results in numerous time-consuming follow-up phone calls to suppliers for receipt and confirmation status. By incorporating EDI functional acknowledgements (FAs), purchase order acknowledgments (POAs), and purchase order changes (POCs) into your business process, buyers can eliminate most or all order status inquiries. They are automatically notified that suppliers have indeed received the orders and that the orders have been confirmed, rejected or changed.

- **Integrated Purchase Order Changes**—Industry research indicates the average purchase order is changed 4.4 times; however, only about 40% of purchase order changes are automated between buyer and supplier. This leads to discrepancies between parties and inaccuracy in subsequent supply chain transactions such as the shipment notice and invoice. Implementing the EDI purchase order changes improves accuracy by ensuring a common understanding between trading partners and eliminating confusion about the buyer’s confirmed commitment to purchase.
- **Automated Replenishment**—Purchase orders (POs), and their follow-on documents such as purchase order acknowledgements and purchase order changes, can be automatically generated by the ERP system based on inventory thresholds and then automatically sent directly to suppliers without human intervention. Upon receipt by the supplier, these orders can be automatically uploaded into the supplier’s order management system (OMS) for processing and fulfillment. Customers can thus receive goods sooner; and because of faster and more accurate processing, they can reduce inventory carrying costs. Because orders can be fulfilled much faster, suppliers often receive earlier payment and improve cash flow, resulting in better relationships between customer and supplier. Furthermore, buyers who pay on time or early can qualify for negotiated discounts.
- **Enhanced Trading Partner Relationships**—Automating the exchange of purchase order documents ensures the synchronization of expectations between the buyer and the supplier. Ambiguity between parties is reduced, and higher levels of customer satisfaction can be achieved through electronic communication that is efficient, timely and accurate. In addition, EDI purchase orders set the threshold for downstream accountability in the shipping and settlement processes.

“We have been able to automate with no re-keying required. The main benefit to the business is that we have been able to shorten the order processing cycle, which has helped us to react more quickly to customer requirements and become a more agile business as a result.”

—ROBERT HAMILTON,
INFRASTRUCTURE MANAGER,
POUPART

See Figure 2 for the typical EDI document flow in support of the procurement process.

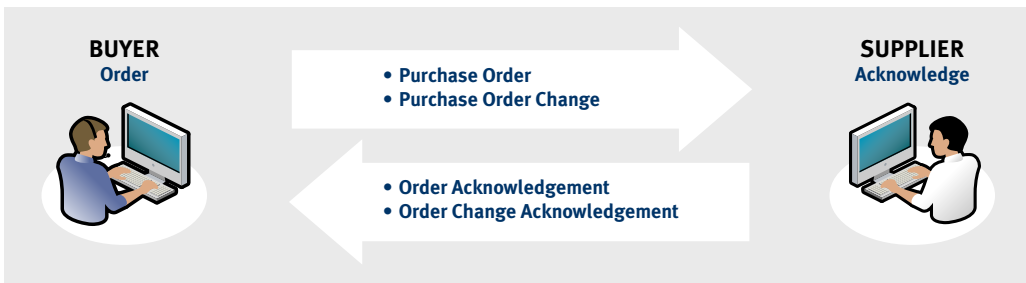


Figure 2: Document Flow in an EDI-Based Purchasing Process

The pressure to maximize procurement performance is increasing. And EDI continues to be a core component of today’s strategic procurement initiatives.

REAL WORLD EXAMPLES FROM GXS CUSTOMERS

Specialty US Retailer

EDI Processes: Receives ASNs from suppliers, receives status updates from truckers

Process Improvements: Improved visibility of inbound shipments, better planning for receiving, automated calculation of ETA notices, changed from direct store delivery to cross-docking process

Additional Benefits: Provide customers with accurate and timely responses to status inquiries

Leading Appliance Manufacturer

EDI Processes: Receives shipment status updates from all carriers

Process Improvements: Information automatically fed into TMS and queried by employees

Additional Benefits: Improved customer satisfaction; faster, more accurate delivery status information

Japanese Motorcycle Manufacturer

EDI Processes: Shipment status updates about spare parts delivery to manufacturer's dealers

Process Improvements: Real-time, accurate delivery information is available

Additional Benefits: Full measurement of carriers based on key performance indicators (KPIs), lower costs from optimized carrier usage

Benefits of EDI in Receiving

The exchange of the electronic Advance Ship Notice (ASN) is critical to enabling companies to streamline the receiving process. According to the GS1 2010 research in the UK, companies that receive EDI ASNs prior to receipt of goods save approximately £12 per order. These results highlight the criticality of ASN adoption to all industries globally.

The ASN is an EDI document (ANSI X12 856 or 857) that lists the details of a shipment of goods due to arrive from a supplier, 3rd party logistics provider (3PL) or fulfillment agent to a customer. Typically, the ASN includes much of the information that was contained in the customer's original purchase order. It also includes carton identifications, transport unit descriptions and transportation details.

The ASN works together with the barcoded shipping label that suppliers affix to the carton/pallet/transport unit being shipped. The serialized barcode is a unique number associated with each transport unit that is also included in the ASN document.

See Figure 3 for a comparison of a typical manual/semi-automated receiving process to an EDI-based receiving process. Note that a three-step process is reduced to only one step.

Manual/Semi-Automated Receiving Process	Automated Receiving Process with EDI
1 Open boxes and find packing slips	1 Scan the bar code labels affixed to the cartons/pallets/boxes. The TMS/ERP/WMS are updated with shipment contents
2 Compare goods received to packing slip	N/A The shipment contents are automatically matched up with the items in the ASN as a result of the scanning
3 Update the TMS/ERP/WMS with receipt status	N/A The TMS/ERP/WMS are automatically updated.

Figure 3: Manual vs. EDI-Based Receiving Process

Examples of the many benefits of an ASN in the receiving process:

- **Advance planning**—By processing ASNs prior to the actual delivery of goods, a buyer can improve warehouse operations. Dock scheduling allows a company to manage capacity and maximize the flow of goods into and through the receiving location. In-transit product can be included in stock level evaluations to determine the appropriate timing for replenishment purchases to be made in order to avoid out-of-stock situations. Personnel can be staffed for various functions in the warehouse or distribution center based upon expected deliveries and the corresponding actions required for each.
- **Automating receiving**—Suppliers can send to their buyers EDI ASNs that provide details on the timing, contents and packaging of forthcoming deliveries. These ASNs are uploaded into the buyer's warehouse management system. When a shipment arrives, receiving personnel scan the barcodes affixed to the transport units containing items to be received. Each barcode provides a unique shipment identifier that can be

correlated with the records in the warehouse management system. As a result, receiving personnel can instantly identify the shipment's supplier, associated purchase order(s), expected contents and its next destination. Compared to manual inspection and receiving processes, EDI technology can significantly reduce receiving time for inbound deliveries to retail stores, distribution centers or manufacturing plants.

- **Cross-docking pallets**—The majority of goods received into distribution centers are not destined to stay there for very long. Often, shipments are to be relayed onto another location such as a nearby manufacturing plant, retail store or customer location. Armed with knowledge from the automated ASN of which shipments are to arrive in the coming days as well as the details of their contents and next destination, warehouse personnel can arrange in advance for outbound transportation for each incoming load. The ideal case is for inbound shipments to be received, inspected, re-configured and then quickly loaded onto trucks for routing to their final destination. This cross-docking process can significantly reduce inventory across the supply chain.
- **Reducing expedites**—The advent of lean manufacturing and just-in-time supply chain models have resulted in businesses carrying lower safety stocks. As a result, supply chains are more dependent than ever on goods arriving within expected time frames. Without visibility into shipment locations and expected arrival dates, merchandising, manufacturing and sales personnel cannot effectively plan marketing activities, production schedules or customer deliveries. EDI documents such as EDI waybills from air and rail carriers, EDI status updates from LTL and TL truckers and bills of lading from ocean carriers can enable companies to have a complete picture of their supply chains to determine if and when expedited shipments may be required.

According to September 2010 GS1 UK research, companies that receive EDI ASNs prior to receipt of goods save approximately £12 per order.

Source: EDI Cost Savings Report, September 2010

See Figure 4 for the typical EDI document flow in support of the shipping process.



Figure 4: Document Flow in an EDI-Based Shipment Process

Benefits of EDI in Invoicing & Payment

“It [EDI] significantly speeds up the invoicing process, and compared to a manually intensive process such as faxing through orders, EDI offers significant performance improvements and efficiency benefits. Above all, it means you are 100 percent guaranteed your message will arrive. These benefits translate into better service for our customers across Europe.”

—DAVID WEBB,
SYSTEMS SUPERVISOR, WD-40

Companies are beginning to focus on streamlining the accounts payable (AP) department to obtain further cost efficiencies and to improve visibility into financial performance. Eliminating the mountains of paper invoices and replacing them with electronic invoices is clearly a first logical step to achieve these benefits. Many countries are enacting legislation that now permits an electronic invoice to serve as the legal invoice to prove compliance or serve as tax originals, further obviating the need to retain paper. Some governments in Europe (e.g., Denmark, Sweden, Finland) and around the world are now mandating or are about to demand the use of e-invoicing for government agencies. Furthermore, compliance with complex, country-specific regulations—such as VAT, electronic signatures, archiving, etc.—can be performed transparently for companies using electronic invoicing solutions. The combination of these factors, plus the numerous benchmark and case studies attesting to the benefits and the availability of easy-to-use e-invoicing solutions, are significantly increasing the adoption of electronic invoicing.

EDI is one of the key technologies used by best-in-class companies to completely remove paper and eliminate error-prone manual processes. See Figure 5 for a comparison of a typical manual/semi-automated invoicing process to an EDI-based invoice process.

Manual/Semi-Automated Invoicing Process	Automated Invoicing Process with EDI
1 Receive invoice from the supplier via mail, fax or email	N/A The EDI invoice is electronically transmitted to the automated accounts payable system
2 Obtain status from TMS/WMS/ERP; compare the receipt information to both the purchase order and the invoice to ensure that the price and quantity are accurate in all places (3-way match).	N/A The accounts payable system automatically performs the 3-way match and forwards through to payment.
3 Send payment to the supplier via paper check.	N/A Payment is automatically made via ACH and an EDI remittance advice is automatically sent to the supplier.

Figure 5: Manual vs. EDI-Based Invoicing & Payment Process

Note that a three-step process can be totally automated. Of course, exception scenarios will still occur—approximately 5-10% of invoices require manual intervention due to errors—and will need to be dealt with. However, with an automated process, accounts payable personnel can focus on resolving issues and collaborating with suppliers rather than performing manual, error-prone data entry and paper-based tasks.

Gartner highlights the huge cost savings potential of e-invoicing. They further note that companies need to automate only 40-50% of their invoices in order to obtain a good return-on-investment:

“The cost savings and benefits of adopting e-invoicing are attractive, and include potential reductions in invoicing costs of between 70% to 90% per invoice, coupled with administrative staff savings” (Gartner Inc., “Top Guidelines for Successfully Leveraging Supplier E-Invoicing Networks” 23 June 2010).

“Gartner has surveyed several large organizations that found that getting 40% to 50% of invoices submitted electronically represented “critical mass” in terms of their business cases” (Gartner Inc., “Top Guidelines for Successfully Leveraging Supplier E-Invoicing Networks” 23 June 2010).

Likewise, according to Aberdeen Group, electronic invoice processing costs are 33%-37% lower than manual costs. See Figure 6 for a comparison of the average cost to process invoices for electronic and manual methods.

Invoice Type	Electronic	Manual
PO-based invoices	\$12.60	\$20.30
Non-PO-based invoices	\$14.00	\$21.10
Other invoices	\$12.40	\$21.30

Figure 6: Average Invoice Receipt-to-Payment Scheduled Cost Source: Aberdeen Group, March 2008

Aberdeen also notes that “[b]est-in-class enterprises, on average, display 83% lower processing costs than all other enterprises.” It costs them an average of \$1.66 to process an invoice versus \$12.62 and over \$40 for Industry Average and Laggard companies respectfully. Best-in-class companies realize 92% lower invoice cycle times, requiring 2.9 days to process an invoice as compared to 14.6 and 32.9 days needed by Average and Laggard companies (Aberdeen Group, 2009).

Below are examples of how EDI enables companies to achieve these benefits:

- **Invoice capture**—Significant cost savings can be achieved simply through the digital transmission of an EDI invoice from the supplier to the buyer. First, electronic delivery avoids the need to pay postage. Furthermore, it obviates the need to open, sort, scan and route the paper invoices once received. With EDI invoicing, all the necessary details flow straight through into the accounts payable system. There is no need for A/P clerks to perform time-consuming and error-prone re-keying of the invoice data into the payables system.
- **Remittance details**—Reconciliation is one of the biggest challenges in the settlement process for buyer-supplier relationships with high transaction volumes. Typically, a buyer will consolidate multiple invoices into a single payment to reduce banking fees and simplify approval processes. Buyers also are prone to debiting invoices for penalties due to lack of compliance with contract terms, non-performance against established service level commitments or credits outstanding from other transactions. Payments made through electronic funds transfer often lack much detail about the associated invoices. A bank will notify their customer through a daily statement that a credit was received to their account in a specified amount from a particular customer. The A/R department at the supplier must then attempt to determine which invoices were associated with the payment transaction and what discounts were applied. A solution to the reconciliation problem involves the use of EDI remittance advices. These documents provide the associated invoice and deduction details necessary to perform reconciliation in the supplier’s accounts receivable system.

BEST-IN-CLASS COMPANIES ENJOY:

- 83% lower invoice processing costs
- 92% lower invoice cycle times

Source: Aberdeen Group, 2009

“The reliability of EDI is important to us... Now we’re looking at adding more business documents, such as invoices, to further improve our efficiency.”

—MANDY GAFFNEY, DIRECTOR, GAFFNEY OF TIPTREE

“[W]e were handling 90,000 invoices per annum for merchandise. This year, we’ll handle 700,000 [invoices], maintaining the same headcount in the accounts payable group... It’s only been through EDI and an automatic matching process on the back-end that we’ve been able to handle that amount of business.”

—TONY MCGUIRE,
SUPPLY CHAIN MANAGER,
DIXONS

- **Trade discounts**—Many suppliers are willing to offer a discount against their receivables in exchange for faster payment. Discounts average 1.5% for payments made 30 days or more in advance of the due date. Without an electronic invoicing process it is often challenging for A/P departments to capitalize on these early payment discounts. The mailing, sorting and re-keying of paper-based invoices add several days to the process. The need to collect additional details, to validate charges and to route approvals in a paper-based process add time to the invoice-approval cycle as well. EDI invoices can be transmitted within seconds, validated quickly and approved within days, enabling buyers to realize early payment discounts. For large buyers with billions of dollars in annual spend, negotiating early payment terms with key suppliers can result in millions of dollars of annual savings.
- **Eliminating the invoice**—In order to entirely eliminate the burden of handling invoices from high-volume, trusted direct materials suppliers, many companies in the manufacturing industry have implemented the Evaluated Receipt Settlement (ERS) process. In a typical ERS scenario the buyer sends an EDI purchase order, including the price for each item. The supplier ships the goods and sends an EDI Advance Ship Notice (ASN). The buyer receives the goods, calculates the amount due based on goods actually received and the price provided in the purchase order, and pays for the shipment. With ERS there is no invoice and there is just a 2-way match. This saves the buyer the time and cost associated with the traditional 3-way match – in which an invoice is also matched against the purchase order and goods received – and the processing of any invoices at all.

See Figure 7 for the typical EDI document flow in support of the invoicing and payment process.

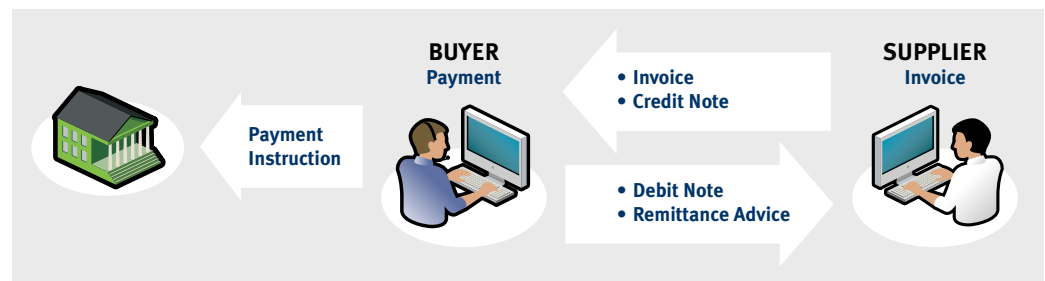


Figure 7: Document Flow in an EDI-Based Invoicing Process

Benefits Are Available to All Trading Partners

All companies are now able to trade electronically with 100% 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.

Conclusion

The data continues to clearly demonstrate that as companies automate more processes in the order-to-cash cycle, the business benefits—lower cost, improved data quality and faster business cycles—multiply quickly. Furthermore, businesses can now leverage the electronic data to obtain the real-time visibility into their supply chains (e.g., obtain order, delivery or payment status; monitor supplier performance; perform supplier scorecarding) to make real-time business decisions. Consequently, smart companies are now making EDI a condition of doing business.

Resources

Are you new to EDI? If you would like to learn more, please visit the EDI Basics website at www.edi.gxs.com. The site explains the types of EDI, the benefits that can be expected, and how to implement an EDI project.

Have you already implemented EDI with your top suppliers? If you would like to expand your program to include your small and medium-size suppliers as well, we can help you determine your return-on-investment (ROI). Please visit www.gxs.com/edi-roi-model to answer ten basic questions about your current purchasing and/or invoicing processes and receive an ROI analysis.

BENEFITS EDI AND B2B BRING TO THE BUSINESS

“The first benefit is to do with productivity since EDI enhances the movement and flow of information between Hutchinson and its partners. The company exchanges 3000 messages each day. Secondly, EDI has converted what was formerly a largely manual process into an IT one and thereby brought with it improvements in the quality of data, reducing manual errors and improving data integrity. Another vitally important benefit is speed. Business agility has been key to Hutchinson’s continued success, and EDI has allowed the company to adapt swiftly and efficiently to emerging requirements.”

—DIDIER CARN
IT CORPORATE DIRECTOR,
HUTCHINSON

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About GXS

GXS is a leading provider of B2B e-commerce solutions and operates the world's largest and most expansive network of integrated business communities. The company's software and services simplify and enhance businesses process integration and collaboration among networks of trading partners. Organisations worldwide, including more than 75 percent of the Fortune 500, use GXS solutions to extend their supply chain networks, optimise product launches, automate warehouse receiving, manage electronic payments and gain supply chain visibility. Based in Gaithersburg, Maryland, GXS has operations and offices around the world. For more information, see <http://www.gxs.co.uk>, <http://blogs.gxs.com> and <http://twitter.com/gxs>.