Internet Extends Reach of EDI

Web Forms Popular With Smallest Companies; Web Services Coming Soon

By Maria Trombly

Two years ago, International Playthings Inc. was doing business the old fashioned way—faxes, letters of credit, and a great deal of sitting around and waiting for various documents. There weren't a lot of examples yet of companies that successfully moved their supply chain to the Internet. "It took a lot of faith to change the way we were doing business," says Holly Harrington, purchasing manager at the Parsippany, NJ-based company, which sells educational toys to toy chains like FAO Schwartz and Zany Brainy.

"But I can't imagine going back to the way we used to do it," she says, now that the company has moved most of its vendors to TradeCard and is in the process of getting its largest buyers online as well. "I can't imagine why anyone wouldn't want to use this."

So far, International Playthings has saved $50,000 in invoicing and payment processing fees. In addition, the vendors are willing to give the company a discount in return for faster payment of invoices—in some cases, vendors are getting their money 10 days faster than they would have with letters of credit. "The boss is really happy that we're getting better terms," Harrington says.

Now, the entire procurement process is automated. Purchase orders, invoices, packing lists and cargo receipts are all tracked, and once all the documents are in place and the invoice is confirmed against the purchase order, payments are triggered automatically.

For many users, electronic invoicing cuts down on dispute resolution times, as customers and suppliers are able to work out problems online (see sidebar). But for Harrington, going with TradeCard actually made dispute resolution possible. "We never were able to resolve these types of problems before," she said. "With a letter of credit, you either accept it or you don't. And we never rejected a shipment because it was going to be a big hassle for the vendor." Today, if there's a problem with a shipment, she can ask the supplier for a discount or a payment extension. "We enter what we would like to do and the reasons, then the vendor gets notified that there's a dispute and they either accept our proposal or make a counteroffer," she said. "Once the two parties agree, it's finalized. It can take two minutes."

Currently, 21 vendors out of 25 are using the TradeCard system, most based in Asia. For them, it offers substantial savings because they were paying about $400 per letter of credit, as opposed to around $120 for a TradeCard payment. The other four, based in Europe, will also have to move to TradeCard soon, Harrington says, even though as wire transfer users, they won't have the same cost savings. "We'll just tell them that this is the only way we're transacting anymore," she says.

The next step is automating International Plaything's own billing process. The first TradeCard-based order ships in mid-August, Harrington says. It's the supplier who pays for the cost of using it, but it's worth it even if there aren't letter of credit-related savings, she says. "The payment is processed the day it's due," she says. "There won't be any human

Electronic Invoicing

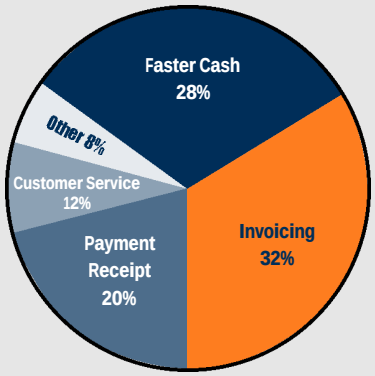
According to a recent Gartner survey, companies that decide to send their business invoices over the Internet can achieve significant cost reductions, improve customer service and pay back their investments when just 2.3 percent of their bills are viewed and paid over the web.

The largest savings come from automating customer dispute processes. According to Gartner, about 15 percent of all invoices sent by large businesses are disputed, and manual processing can hold up payments considerably.

Gartner surveyed more than 100 large U.S.-based corporations earning at least $100 million in revenue and engaged in purchase-order-based billing. The total net potential savings through electronic invoice presentment (EIP) averaged $5.7 million per year, or about $7.25 per invoice. Additional savings result when invoices are paid faster and a company can reduce its cost of working capital.

Finally, customer care costs can be reduced through automated dispute resolution processes.

Percentage of EIP-related savings anticipated from various categories
(From a recent survey of companies that have firm plans to distribute business bills over the Internet).



Comparative costs for a large company mailing 66,000 business bills a month:


$5 per paper bill
VS.
$2.50 for an electronic bill



$50 to manually handle a dispute
VS.
$25 to process a dispute electronically



$10 to manually process an incoming payment
VS.
$3 to process an electronic payment


intervention—as soon as the document is in compliance, the payment is made."

The hardest part will be getting the smallest buyers to use the system, but not because of the difficulty of using the web-based interface. "With the small stores, they want the reps to come in and talk and show them stuff," Harrington says. "It's the way they've always done business."

According to TradeCard spokesman Michael Klausner, it acts as a hub for billing and purchase order information. Invoices, purchase orders and other documents can come in and go out in a number of ways—through user-friendly web-based interfaces, file transfers or EDI.

Since it's focused on cross-border transactions—which makes it appealing to companies like International Playthings—TradeCard is particularly strong in its payment mechanisms. It partners with Thomas Cooke, a major European cash management bank, to transfer funds directly between buyers and sellers; and currently has some 400 customers, including companies like K-Mart and Radio Shack.

Other players in the online billing space serve other portions of the market, choosing to focus on retail businesses, health care, manufacturing, even legal billing. Archon Group, LP, for example, started implementing electronic billing and payment in January through a product from Bottomline Technologies. "The actual movement of invoices through the approval process was very time consuming and labor intensive," said Ron Barger, senior vice president and general counsel at Archon Group, based in Irving, TX. The manual invoicing process averaged about 26 days, and Barger expects that to go down to 10 days after the completion of the move to electronic billing. (See sidebar.)

Manual Invoicing

Manual processing of invoices is expensive and time consuming because it is difficult for companies to accurately reconcile invoices, purchase orders and other documents. Reasons include high error rates in fulfillment, changes in item numbers, poor documentation of back orders and other problems.

With Internet-based automation and collaboration, companies can reduce administrative overhead, minimize the re-keying of errors and allow people to manage the documents and the information much more quickly.

In a recent AMR Research survey, companies were asked to rank the importance of administrative services when moving transactions to online exchanges.

(Key: 1- not important, 10 - extremely important)

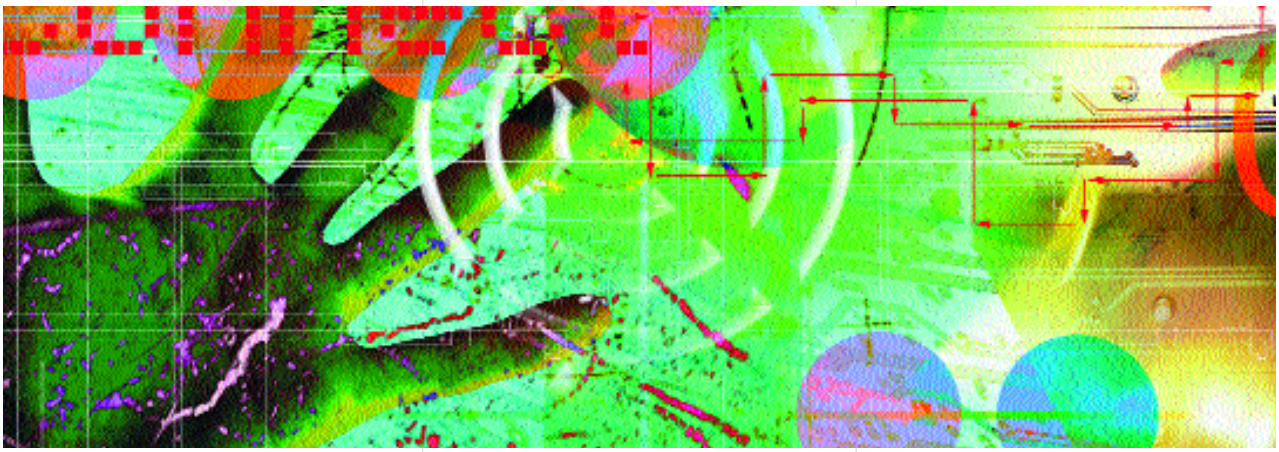
Matching of Purchase Order to Invoice:	7.62
Audit of Complete Financial Settlement:	7.02
Electronic Bill Presentation:	6.65
Self-Service Inquiry and Disputes:	6.43
Automated Settlement:	5.74
Currency Conversion:	5.32
Logistics Insurance:	4.68
Credit Insurance:	4.48

(Source: AMR Research)

When Archon started to look at possible alternatives, there were in fact a couple of traditional EDI-based solutions for the legal environment. "But we didn't think our applications would integrate as well with the technology," Barger said. "We were trying to go to the next generation." In addition, there were possible integration issues for Archon's business partners as well. A web-based solution doesn't present the same kinds of problems. "In the United States, at least, all the firms have web technology," he says.

In addition, the Bottomline solution allows for integration with Archon's own accounting software and allows the company to capture the invoices for analytic purposes. Bottomline Technologies currently supports EDI, XML or flat files generated by accounting systems, databases and other applications.

"We don't currently support Web Services but we're moving towards a J2EE architecture and inherent in that will be SOAP standards," said Brian D. Hinton, vice president at Portsmouth, NH-based Bottomline Technologies Inc. SOAP (simple object access protocol) is an XML-based standard that enables applications to exchange data and instructions. It, along with J2EE (a version of



Web Services

The first incarnation of the Internet was e-mail and other systems for moving individual files between computers. A file—such as an e-mail, or an MP3 song or a photograph—could be sent from any computer to any other computer, though the receiver wouldn't necessarily be able to read it, see it or listen to it. The big breakthrough was TCP/IP (Transmission Control Protocol/Internet Protocol), a standard way to transmit data.

The second incarnation of the Internet was the World Wide Web, which added a standard way of displaying files. Now any user could see the same web page as any other user, regardless of what kind of computer he or she was using. The big breakthrough was HTML, or hypertext markup language.

This year, the third incarnation of the Internet began to be realized—Web Services—which provide a standard way of executing instructions. Built on XML (extensible markup language), Web Services allows any computer program to interact with any other one in a standard way—making it possible to automate more processes than ever before possible.

Here are the major components of Web Services:

Java and .Net
Java and .Net are two competing platforms, Java from Sun Microsystems and .Net from Microsoft, in which Web Services can be built. The two can interact with one another, the same way that Internet Explorer and Netscape Navigator can both pull up the same web pages.

SOAP
(Simple Object Access Protocol)
Allows applications to pass data and instructions to one another.

WSDL
(Web Services Description Language)
Allows a Web Service to be described so it can be used by other applications.

UDDI
(Universal Description, Discovery and Integration)
Allows a Web Service to be listed in a directory of Web Services so it can be easily found.

the Java programming language), is one of the basic building blocks of Web Services, which are already starting to revolutionize the integration and automation of business processes. (See Web Services.)

Like International Playthings, TAC Worldwide decided to get its feet wet by asking its vendors to starting sending in electronic invoices. "We decided to start with the accounts payable area first because it gives us the opportunity to attack a very nice, manageable, but real opportunity," said Steve Morin, the company's chief information officer. "Our applications and systems are a much more modern platform while our billing system is a legacy system that we are in the process of moving to something else. That's the real sweet spot for us, but we couldn't get out of our own way."

TAC, a global provider of professional staffing services, decided to go with a service from Clareon to automate accounts payable and payment processing with the third-party staffing agencies that the company uses.

The process of getting the vendors onto the system took about the month and a half, but it only took 18 hours for TAC to hook up its system to Clareon's, with the data automatically transferred in and out of TAC's Oracle database management system. Clareon does all the conversions between different standards automatically—meaning that TAC didn't have much work to do at all. "It's kind of amazing really," says Morin. "This was a very, very simple thing for us to do." The system went live last year.

But since not all of TAC's systems are as modern as its Oracle database, Morin is looking forward to the next development in Internet technology—Web Services.

While direct file transfers are an advantage over web form-based systems in that data is moved around automatically, without employees having to go on the web and manually enter invoicing information, they do require some integration work. TAC and Clareon had to agree on the formats that the data will be sent in, for example. And if TAC's applications didn't support the same data formats as Clareon, a custom interface would have had to be written.

Web Services are already making the process easier with a common standard for exchanging data and instructions between applications. This standard is based on XML (extensible markup language), which is a relative of the HTML used on web sites. Web Services have been embraced by all the major technology vendors in the country, including Microsoft, IBM and Sun Microsystems. Some of the world's largest institutions are already experimenting with Web Services applications, and Web Services are expected to proliferate in the next few years, much as World Wide Web pages have already.

"Web Services are a very promising aspect of development and it's something that we're going to be able to take advantage of tremendously in the long term," says Morin. "We will be using them in integrating legacy applications."

Clareon itself has bet big on XML and has positioned itself to offer Web Services support once the market is ready.

"Early adopters are trying to utilize Web Services for mundane tasks," explained Clyde Thomas, chief technology officer at Portland, ME-based Clareon Corp. "For mission-critical applications, there's a little bit of hesitancy. Payments need to be bulletproof. They need to always work. Security needs to be extremely high—we're dealing with extremely sensitive information."

Until Web Services are ready, Clareon is working on multiple ways for buyers and suppliers to access its billing and payment system—which already has over 3,000 customers, including Fleet Bank, Morgan Stanley Dean Witter and the state of Maine. "We integrate into any ERP or accounts payable environment out there," Thomas said. "We've even integrated into some old legacy environments—COBOL that was written in the Sixties."

Once the information is brought into Clareon's system, it's formatted into XML. From there, it can be accessed in a number of ways, including a web-based interface. "The only thing that a supplier has to have is access to the Internet and a browser," said Thomas. "That's it. It takes five to 10 minutes to enroll, and once they enroll with Clareon with one of their buyers, they're enrolled with anyone who wants to pay them that way."

Another vendor planning to offer Web Services integration is Mountain View, CA-based ValiCert, used by ABN AMRO Bank, Credit Suisse Group, Dell, Sears and the U.S. Navy—as well as over 200 other organizations.

"On the whole invoice-to-payment process, what we call the financial supply chain, I think there is going to be a lot of remittance and linking of remittance data," said David Jevans, senior Vice President, Marketing at ValiCert, Inc. "The whole process of invoicing, financing and payment is going to be linked together and that's where XML and Web Services come in."

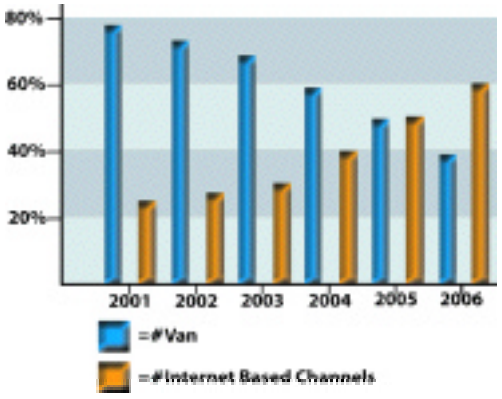
Another driver of Web Services in this space will be the inevitable consolidation in the industry. "There's a lot of small vendors, and they need to get together to compete against the older big guys," Jevans said.

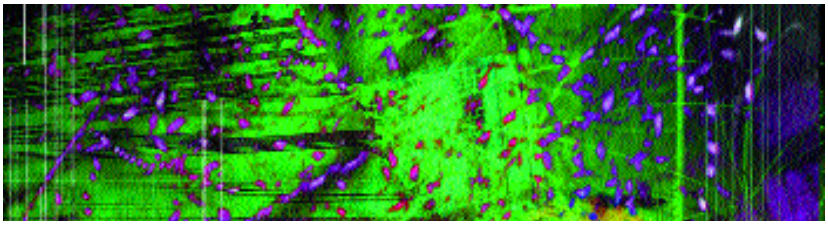
Electronic Data Interchange, or EDI, was, in effect, an early industrial precursor of the Internet. Starting in the 1960s, companies began to exchange supply chain data over electronic networks. When the Internet—a

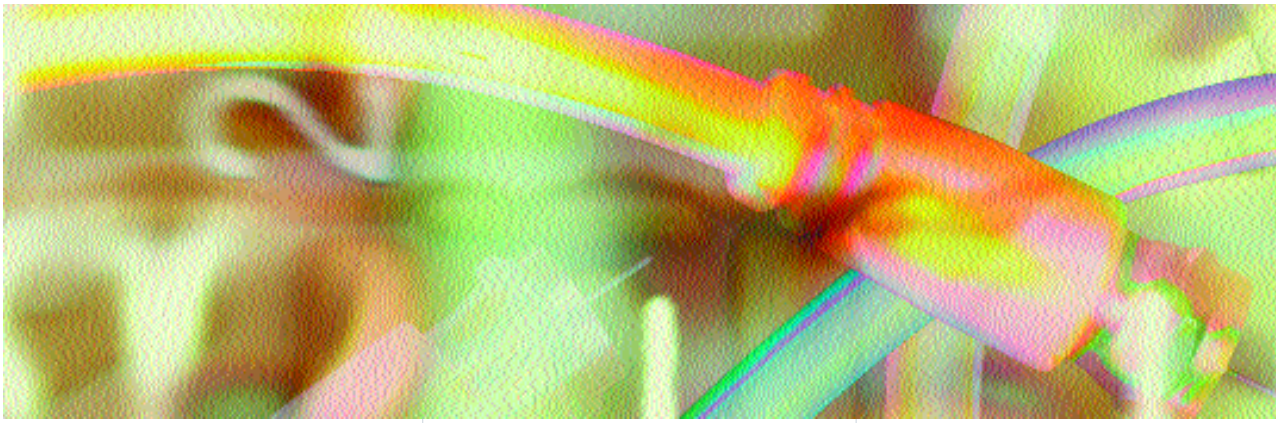
EDI—VANs
(Value Added Networks) vs. the Internet

According to data from the Cambridge, MA-based Giga Information Group, EDI transactions will continue to account for the majority of all computerized business-to-business transactions for the next several years. However, the traditional value added networks (VANs) will have a progressively smaller share of the market, replaced by web forms, exchanges and other Internet-based channels.

Percent of EDI transactions by channel
First number is VAN, second number is all Internet-based channels—including web forms, direct connections, electronic trading networks (ETNs) and online exchanges







cheaper, more flexible alternative—appeared on the scene, it seemed as though the days of EDI were numbered. Instead, EDI has grown, and the Internet has actually contributed to its growth.

According to Ken Vollmer, research director at Cambridge, MA-based Giga Information Group, EDI revenues for software and services will grow from $1.8 billion in 2001 to $2.1 billion by 2006. The reason is that there's a difference between the EDI standards—the way the information is coded for transmission—and the transmission networks themselves. It's like the difference between the language you use for your phone calls and what long distance carrier you sign up with.

EDI messages have traditionally been sent over value added networks (VANs), but can quite as easily be sent over the Internet—as e-mails, file transfers, across virtual private networks or through other Internet mechanisms. (See EDI VANs sidebar.)

In the last couple of years an alternative has arisen to the EDI message standards—various XML-based glossaries have been springing up in every industry segment. "But in many ways, EDI is far superior to XML," says Vollmer. "It doesn't require metadata tags, it's much more concise and doesn't put much strain on the network. And if the trading partner already understands EDI, there's no value in putting it in XML."

An XML tag is the descriptive phrase that explains what the data is. EDI uses compact and very specific codes to explain the meaning of the data. XML tags, while more flexible and clearer, take up more space in the message. The difference can be quite substantial—EDI was created at a time when computers were slow and had limited memory, so the standard is extremely compact.

But the VANs themselves, the old networks that EDI messages have traditionally moved over, are already being hit hard by recent technological developments.

"No one is throwing out their EDI network," said Avivah Litan, an analyst at Stamford, CT-based Gartner. "But they're adding Internet trading capabilities for smaller and mid-sized trading partners. It's too expensive to try to use [traditional] EDI networks for most companies. But with the Internet, everyone can do it."

Other advantages include the collaborative potential of Internet-based systems. "With the Internet, you can talk about things line by line, you can partial pay, negotiate terms online, link to the procurement and sales processes. It's really a lot more than just turning paper into electronics.

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