Microsoft®
.net™
for manufacturing

BRINGING THE POWER OF THE INTERNET TO THE ENTERPRISE

Procurement and Finance

.NET Strategy

MICROSOFT .NET FOR MANUFACTURING
CAN FORM THE BACKBONE OF
MANUFACTURERS' SUPPLY WEB
INTEGRATION STRATEGIES.

Manufacturers have traditionally set them-selves apart from—and ahead of—their competition by vertically integrating their operations to reduce transaction and coor-dination costs. The Internet is radically changing that competitive landscape.

Organizations are now taking a more outward-looking approach. Working with Internet technologies that link them to suppliers and other key players in the sup-ply chain, procurement and finance man-agers are reducing costs, increasing asset utilization, harnessing innovation, and gaining better access to information for decision-making. A resilient supply Web is increasingly becoming the defining business advantage for manufacturers in the new digital economy.

Finding the right means to use the Internet to their competitive advantage is one of manufacturers' biggest challenges, though. That's where Microsoft® .NET for Manufacturing comes in. Providing the underlying platform to support procure-ment, Microsoft .NET for Manufacturing offers a comprehensive, scalable, flexible

Microsoft .NET for Manufacturing is a comprehensive platform of software, stan-dards, and services that enable manufac-turers to coordinate their global supply chain operations through the Internet. As organizations move from tactical system deployment to buying and configuring or building strategic supply Web solutions, having a platform that provides the most integrated, rich, and comprehensive array of software, standards, and services, yet also supports an evolutionary approach is paramount. Microsoft .NET for Manufacturing provides the simplest, fastest-to-deploy, and most flexible plat-form for supporting these initiatives.

Here are specific procurement needs and the Microsoft .NET for Manufacturing technologies that address them:

Security and mobility. Securely deliv-ering and collecting information from anywhere on any device from wireless handheld devices to legacy systems is a necessity. The Microsoft Windows® 2000 Professional and Windows CE 3.0 operat-ing systems both feature an integrated

Procuring the Internet Advantage

foundation for ramping up to meet the demands of Internet-driven business beyond simply executing purchase orders and payments through e-procurement and e-marketplace systems.

HOW THE .NET PLATFORM ANSWERS THE CALL

Manufacturers who are challenged to become leaner and more agile need to determine where to focus their efforts for the best results and which solutions will deliver on their business objectives. While the answers vary by company, general principles and technologies embodied within the Microsoft .NET for Manufacturing platform can be widely applied.

Web browser and server with XML sup-port and robust security. Supporting mobile communications, Windows CE 3.0 can run on 23 different chips and on devices as small as a smart card with 512 K in memory. Microsoft Windows 2000 Server, based on the Windows NT® operating system, provides integrated Active Directory™ service to simplify management and security.

Integration and flexible orchestration. As manufacturers work with their partners on the Web, they find that they need a flex-ible way to integrate information from multiple systems in multiple formats. Microsoft BizTalk™ Server 2000 provides support for developing, executing, and orchestrating distributed business processes with an intuitive Microsoft Visio®-based

process designer, a visual data mapping tool that supports key Internet and business formats and standards, and message queuing technology to execute supply chain processes. Integration with legacy systems and mainframes can be achieved through Windows Services for Unix and Novell and Microsoft Host Integration Server, respectively.

Real-time and scalable. Working with thousands of users and disparate systems requires a platform that can support real-time data delivery and execute hundreds of processes concurrently. Microsoft Application Center 2000 enables Windows 2000 Datacenter Server to scale up to 32 processors and 64 GB of RAM and can run an application across multiple servers. Windows CE supports real-time data processing and collection from the plant floor.

Lean and standards-based approach. Integrating supply chain information should be kept simple. Microsoft .NET promotes the use of Web services, which are applications that expose their capabilities via Internet standards such as Simple Object Access Protocol, and use XML to exchange data. These, along with emerging standards such as Universal Description, Discovery, and Integration, can help manufacturers integrate Web services from internal applications or Web-accessible applications.

Rich analytics and reliable execution. Manufacturers also need a database engine that provides reliable execution of supply chain processes and transactions and delivers personalized graphical views and analysis throughout their organizations and supply chains. Microsoft SQL Server™ 2000 provides robust relational transaction database capabilities to run demanding enterprise applications, combined with integrated analytical services.

Collaboration, content, and community. Functions such as scheduling, instant messaging, video teleconferencing, and content indexing and sharing create an environment for innovation and knowledge sharing, which in turn fosters a sense of community with suppliers. Microsoft Exchange Server 2000 provides all of these key capabilities.

Personalized portal and catalog. It's important to speed the delivery of

relevant information across the supply chain through personalized portal views to information. Microsoft Commerce Server 2000 connects to a powerful database engine to support transactions and to do site analysis.

Supplier enablement. Extending to marketplaces run by Ariba, Commerce One, VerticalNet, and others brings manufacturers and suppliers together. Microsoft—along with Dell, Ariba, Commerce One, Accenture, KPMG, and others—provides scalable supply chain management and execution solutions based on the aforementioned products. Offerings include a hosted service within the Microsoft bCentral™ small business services solutions family. For more information on this program, visit www.bcentral.com. ■

By James E. Heaton

JAMES E. HEATON, PRESIDENT OF AMR CONSULTING, HAS MORE THAN FOUR DECADES OF EXPERIENCE IN THE MANUFACTURING AND TECHNOLOGY INDUSTRIES. CURRENTLY, HE WORKS WITH END-USERS IN IMPLEMENTING PLANNING, PRODUCT SELECTION, AND PROJECT DEPLOYMENT AND WITH VENDORS TO ASSIST IN THE DEFINITION, LAUNCH, OR REDIRECTION OF MANUFACTURING SOFTWARE AND HARDWARE PRODUCTS.

Despite the current market turmoil, the e-business transformation is not over. Indeed, for manufacturers, economic uncertainty redoubles the imperative. In any downturn, unlike their dot-com brethren, manufacturers face a world of competitive opportunity. E-business technologies and strategies have reached the point where they can be combined with the resources of the entire manufacturing enterprise. While manufacturers may no longer need to worry about venture-backed wildcards, the real race has just begun. From now on, traditional, head-to-head competitors will be the businesses creating disruptive change.

As they blend e-business techniques into the rest of their operations, companies need to focus on the difference between early adoption and scalable innovation. Implementations must account for

E-Manufacturing: A New Era of Supply Webs

hard-nosed realities on multiple fronts. E-business teams will need to reconcile the price of innovation with the sunk costs in existing systems. They will need to select technology platforms that allow for rapid adoption of new functionality. As they build out new processes, they must be ready for flexible reconfiguration.

After all, e-business efforts will be extending ideas and business goals that have been popular among leading manufacturers for more than a decade. The shift is one of speed and style, not substance. And the change will continue to be constant and competitive. Any technology initiative needs to address five principles of strategic manufacturing excellence: customer value, globalization, competency, collaboration, and agility.

CUSTOMER VALUE

Customer-facing applications have been the early proving ground for e-business. Companies can recognize opportunities sooner and respond to customer issues faster today than they could five years ago. However, the Internet is no longer solely the province of new customer creation. It represents a tremendous platform for both expanding the value offered to existing customers and reducing the total cost of customer service.

Manufacturers need to apply industrial-strength standards to serving customers via the Internet and communicating the business-to-consumer (B2C) lessons learned across the entire enterprise. The digital loop of B2C feedback is only valuable for a manufacturer if it can be tied into the activities of the entire business.

Finance teams have the opportunity to use customer-facing initiatives to focus the organization. Who are the most profitable customers, and what are the most profitable products? Without an analytical framework for breaking down the costs of production, fulfillment, and service, manufacturers are flying blind. Customer-driven strategies need to reflect financial realities.

GLOBALIZATION

In the high-touch model promoted by the Internet, customer expectations are rising in all the major international markets. Manufacturers committed to serving customers globally will have to support more product and service customization than ever. As a starting point, that includes their Internet presence. How can a company claim to be customer-oriented in 70 countries with a Web site that speaks one language?

The change does not stop there. With

e-business techniques originally developed to serve customers, companies can save time for their international employees and partners through Internet-based training and collaboration.

As part of these efforts, finance and procurement executives recognize the potential to achieve savings via more unified global purchasing. Today, many of them are undertaking e-procurement efforts to streamline and standardize their enterprises' global buying strategies. However, the savings will go unrealized without the proper technology foundation. Finance and purchasing executives should look into how they can migrate their global procurement teams safely to a next-generation strategy without over-spending on technology or related services.

COMPETENCY

The single-minded pursuit of excellence will continue to distinguish the best from the rest in a world where the possibilities have started to appear endless. The popular adoption of the Internet has lowered the costs of communication between businesses.

As a result, lean manufacturers can push the envelope even further and expand their outsourcing practices. However, this will not be limited to manufacturing and distribution operations. The e-services made possible by current Internet technologies will allow companies to re-think the business value of many back-office functions. Companies unwilling to radically alter their expectations for "internal" processes will miss the opportunity to reset the cost of doing business.

Chief financial officers understood the value of internal competency when they led enterprise resource planning (ERP) deployments in the 1990s. Today, many of those same executives are spearheading efforts to optimize those ERP deployments. Internet technologies offer companies the potential to lower the cost of supporting ERP while extending the accessibility. By making ERP easier for employees to use, CFOs boost the accuracy and value of enterprise information—strengthening decision-making across the entire organization.

COLLABORATION

The other side of the competency coin is mastery of the supply chain. However, on-time quality is only the first order of business. Leading manufacturers are using information to ensure performance at all levels of the business-to-business (B2B) collaborative process. In contrast to the days of broadcast electronic data interchange, companies have learned that outsourcing excellence requires value-added interaction. The tightening of B2B relationships will affect sales, marketing, product development, and even finance. Innovative manufacturers are delivering convenient information-based services that enable supplier action. By financing safety nets for smaller suppliers, these manufacturers are taking virtual collaboration to the next level and dramatically improving supply chain management efforts.

AGILITY

Now more than ever, strategy has to be executed with agility. So, what do we mean when we say "agility?" What we mean is this: Processes and systems must be designed to accommodate unanticipated comprehensive change. But in this environment, accurate planning has proven increasingly difficult. Therefore, you should not hard-wire anticipation. Rather, think through the requirements for operational flexibility.

For agile manufacturing veterans, the clear imperative is to expand their use of information as a key ingredient in the change process. However, even these companies need to consider how e-business technologies extend agility to the information technology (IT) infrastructure itself.

Technology can be a source of both costs and profits. Finance and procurement need to assume a leadership role in ensuring that it is the latter. If organizations hesitate to innovate today, they risk running on outmoded platforms tomorrow. Companies need to make smart IT investments that allow for changing methods and shifting tactics. Otherwise, manufacturers are simply repeating practices in IT that were abolished 20 years ago in the plant.

Again, the fundamental change is the widespread demand for this information and interaction among suppliers, part-

ners, and customers. The requirements themselves are not new. Rather, it is the urgency—the speed—with which the market expects a response. Some observers look at these issues and generically bucket them under supply chain integration. And, in doing so, they miss the point. Agility will not proceed in a wholesale fashion. Smart e-business strategies will move forward with opportunistic integration and creation of new Internet services.

For these reasons, e-business architects must stop looking at their existing systems as baggage and utilize them instead as the foundation for new value creation. They need to select e-business technology that will allow them to address a portfolio of strategies: adding new functionality, preserving old applications, and leveraging new services from the Internet applications provider world as well. At the business level, supply chain integration and B2B collaboration are vital.

However, manufacturers must avoid the trap of hardwiring their strategies at the outset. Internet technology-based initiatives such as Microsoft® .NET promise new, concurrently rapid and agile solutions to this set of challenges.

In particular, four Microsoft products are especially significant in meeting supplier management challenges.

First, Microsoft SharePoint™ Portal

Server provides a readily implemented means of integrating diverse information and file types across internal and external systems. Second, Microsoft Exchange 2000 Conferencing Server supports collaborative decision-making across multiple sites. Third, Microsoft BizTalk™ Server provides a next generation XML-based integration platform for agilely integrating legacy, ERP, and supply chain management systems.

Finally, Microsoft Commerce Server 2000 is a key component of Microsoft's integrated Supplier Accelerator initiative for conducting B2B e-commerce direct with suppliers or through leading marketplaces.

Real change is what happens after the hue and cry of the revolution. It is a constant process, not a one-time event. Manufacturers should marshal their leadership and prioritize today's apparent innovations accordingly. ■

processes. With the Commerce One Solution, running on Microsoft® technologies, we can conduct procurement tasks across the enterprise online, in real time. This keeps costs low, productivity high, and cycle times short."

The fanciest, most sophisticated procurement process in the world won't do a bit of good for a corporation unless it's easy to use. People on both the buy side and sell side will find ways to circumvent the process—oftentimes undermining the very benefits that the process sought to provide—if it's not user friendly and doesn't easily fulfill their needs.

Likewise, the ease of procurement processes often dictates how beneficial they can be to the corporation, says Eddie Page, purchasing manager for Eastman Chemical Co., a leading international chemical company, producing fibers, plastics, and chemicals for the

PROVIDING THE BUYING/SELLING LINK

The Commerce One Solution is a business-to-business e-commerce solution that dynamically links buying and supplying organizations into real-time trading communities. On the purchasing side, it satisfies Eastman's daily purchasing requirements.

"The Commerce One BuySite e-procurement application includes full-featured desktop commerce functionality to enable us to buy goods and services, as well as the tools needed to create and manage a multi-supplier catalog," says Page. "It also enables seamless interoperability between buyers and suppliers."

Eastman Chemical Co.

Multibillion-Dollar Procurement Made Easy

manufacture of pharmaceuticals, cosmetics, plastics, and photographic chemicals. Page knows that working in a simple, convenient purchasing environment offers advantages to both buyers and vendors. That's why he can clearly see the everyday benefits of Eastman's implementation of an e-commerce system from Commerce One.

"Our annual purchases total more than $3 billion," says Page. "Eastman required an e-commerce solution to better leverage corporate spending and increase return on investment. We wanted to reduce costs, shorten cycle times, and eliminate manual purchasing

Commerce One BuySite provides direct, real-time access to suppliers and instant access to the Web. Also within the Commerce One Solution is Commerce One MarketSite, the U.S. portal for the worldwide exchange of goods and services.

"By leveraging Commerce One MarketSite's open XML (eXtensible Markup Language) architecture through the BuySite application, our employees can tap directly into vendors' inventory management systems and receive immediate feedback on products, pricing, and availability," says Page.

Eastman had previously relied on its SAP R/3 enterprise resource planning system to send faxes or electronic data

interchange (EDI) transmissions to suppliers. Traditional EDI, however, doesn't integrate well with all vendor systems, creating a burden of multiple customizations and integrations.

"Through BuySite and MarketSite, we can enjoy the advantage of real-time transactions because all a supplier needs is a connection to the Web," explains Page.

CUSTOMIZED BUSINESS BENEFITS

Commerce One BuySite can be customized with criteria for purchasing based on corporate policies, such as authorized spending limits.

"The system can intelligently assess multiple conditions, including whether the user has a credit card or whether the purchase is under $2,000," explains Page. "With this information, BuySite can then determine the method for sending out an e-commerce purchase order—often keeping it completely out of the SAP process to eliminate unnecessary steps in certain transactions."

Because BuySite stores data on purchase/supplier behavior patterns, it's a useful and strategic tool for negotiating favorable vendor contracts.

"With the purchasing card and pre-approved multi-supplier electronic catalog, employees are encouraged to use only corporate-approved suppliers," says Page. "As a result, we have substantially reduced the volume of rogue purchasing—and orders are getting back to the preferred suppliers with purchases being made at the contracted prices. Because order volume is increasing with contracted suppliers, and that volume is then being leveraged for increased discounts, overall costs are decreasing."

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One significant factor in choosing the Commerce One Solution was its alignment with the Microsoft .NET Enterprise Servers.

Using BuySite, Eastman can also improve inventory practices through its enhanced ability to gauge inventory levels that meet the real-world requirements of its different departments.

"As a large chemical company, we have an extensive amount of highly sophisticated equipment," says Page. "Parts that are critical to the operation of the plant can take anywhere from six months to a year and a half to obtain, so we must maintain them in our inventory. However, in the past, we have also maintained low-dollar, non-critical repetitive purchase inventory. With BuySite, we can now eliminate excess inventory and concentrate on critical items only in our catalog."

IN LINE WITH BUSINESS OBJECTIVES

One significant factor in choosing the Commerce One Solution was its alignment with Microsoft .NET Enterprise Servers. "We chose to support the Commerce One technology with Microsoft SQL Server™ because we needed to ensure reliability and performance throughout the system, from front end to back end," says Page. "And we are getting the results we anticipated."

Hosted by the Microsoft Windows NT® Server 4.0 operating system, this solution takes advantage of the combination of Web and operating services available in Windows NT Server to deploy scalable and reliable Web-based applications.

"Microsoft Internet Information Server makes it easy to build dynamic Web sites, and we used Microsoft Site Server to manage content and analyze usage," says Page.

Eastman initially implemented the Commerce One Solution at its Kingsport, Tenn., headquarters with one commodity vendor (for office supplies) and 50 users. "That number quickly rose to almost 250 users, as our employees saw the way BuySite automated the internal procurement process from requisition to order," recalls Page.

Eastman is now implementing it on a much larger scale. "We have added a second vendor (for lab supplies) and have begun implementing BuySite across all four major U.S. sites," reports Page. "Today, the Commerce One Solution on the SQL Server database, which is 3 gigabytes in total, serves 500 users across the Eastman enterprise."

"We needed a solution that would grow with us and not become obsolete in a year," Page concludes, "and Commerce One fits the bill." ■

PROBLEM:

Eastman Chemical Co. wanted to implement a Web-based e-procurement application that would integrate with its enterprise resource planning system. It needed a solution that would provide desktop commerce functionality and streamline workflow for better purchase order processing and tracking.

SOLUTION:

Eastman installed the Commerce One Solution, BuySite Enterprise Edition, which includes Commerce One BuySite, an e-procurement application, and Commerce One MarketSite, a global trading portal. Backed by Microsoft .NET Enterprise Servers, this Web-based system links buyers and sellers into a virtual marketplace that enables real-time buying and selling. Eastman has also streamlined work flow by reducing manual workload and brought a tighter focus on supplier strategy and standardization of product selections.

FreeMarkets

As more and more dot-coms sink into the vortex, emerging New Economy players are finding it increasingly difficult to maintain their momentum. So just what does it take to survive? According to John Doerr, general partner of venture capital firm Kleiner Perkins Caufield & Buyers, only those with sound business, marketing, and technology fundamentals will make the cut.

Case in point: FreeMarkets, an operator of successful business-to-business (B2B) online auctions. FreeMarkets' business savvy is shown by the fact that in the teeth of a general business slowdown, the company facilitated the sale of more than $10 billion worth of goods and services in the last quarter alone. Technologically, too, FreeMarkets has always prided itself in offering top-quality service to its customers.

Despite already providing 99.9% reliability, the company realized that it needed even higher levels of reliability as well as a platform that could scale to meet growth in both users and the volume of business conducted through its e-market-

reliability, availability, scalability, and flexibility of the Windows 2000 Datacenter Server platform allows us to achieve these goals and provide great economic benefit for our clients and suppliers."

GROWING DEMANDS

FreeMarkets brings together buyers from the world's largest corporations with suppliers from around the globe to facilitate the purchase of goods and services. The company conducts B2B online auctions for industrial parts, raw materials, commodities, and services. In these auctions, suppliers compete in real time for the purchase orders of large buying organizations by gradually lowering their prices until the auction is closed.

In the third quarter of 2000 alone, while processing more than $10 billion worth of goods and services, FreeMarkets worked with more than 7,000 suppliers and generated an estimated $2 billion in savings for its customers. On a busy day, the site can produce in excess of 400,000 hits.

High-Availability System Scales Even Higher

place. That's why FreeMarkets decided to migrate to Microsoft® Windows® 2000 Datacenter Server operating system.

Windows 2000 Datacenter Server, the newest member of the Windows 2000 family, is part of the Microsoft .NET Enterprise Servers family. This operating system is designed with a focus on scalability and reliability for enterprise users. It provides companies such as FreeMarkets with the ability to quickly expand to meet system needs while maintaining high levels of availability.

"Liquidity, credibility, and productivity are FreeMarkets' most important success factors," says Dave McCormick, FreeMarkets' senior vice president, Core Markets. "Our market intelligence and performance capabilities, facilitated by the

In addition to these figures, FreeMarkets maintained its 99.9% up-time rate and system availability and experienced a 60% growth in business volume during 2000. But as good as this sounds, this is one situation where the philosophy "If it ain't broke, don't fix it" does not apply.

FreeMarkets goal was to be able to comfortably handle peak requirements, establish a common platform that could scale to its future needs, and ensure that its B2B e-marketplace would be continually available for its global customers and suppliers to conduct business 24/7.

"There isn't a market if the system goes down," states Bill Blair, senior vice president and chief technology officer of FreeMarkets. "We conduct auctions for millions of dollars worth of business each

day. We can't afford to be down. By having a server environment that scales up and out, we can assure buyers and suppliers that our system won't fail."

As FreeMarkets already experiences 99.9% up-time using non-clustered Windows NT®-based servers, it is difficult to envision a Windows 2000 Datacenter Server implementation improving upon that figure. But that's not considering the whole equation. According to Bernard, maintaining FreeMarket's high up-time rate required a high level of routine maintenance. With the Windows NT-based solution, each server received one to two hours of scheduled maintenance each month. Given that there are more than a dozen machines, that amounts to a half-day or more each month dedicated to keeping system performance at its peak.

"[Windows 2000] Datacenter Server makes things simpler, as it has fewer maintenance problems and issues," says Tony Bernard, director of technical architecture for FreeMarkets. "Due to clustering and load balancing, we don't need to schedule downtime for maintenance, and now we're up 99.999% of the time." During its first four months of operation, in fact, Windows 2000 Datacenter Server was not down even once.

As a result, FreeMarkets is gradually phasing out its Windows NT-based servers, replacing them with Windows 2000 Datacenter Server-based clusters. "One two-node cluster machine can replace about six non-clustered servers," says Bernard.

By clustering several servers to act as a single unit, network capacity is heightened as the servers within the cluster can evenly distribute the workload. One server within the cluster can also take over from another (failover) in the case of server failure, making that failure transparent to users.

FIRM FOUNDATION

FreeMarkets is using the Windows 2000 Datacenter Server operating system and Intel hardware as the foundation for its future expansion. The platform strategy relies heavily on Microsoft .NET Enterprise Servers, an integrated Web platform incorporating Windows 2000

Datacenter Server, Microsoft SQL Server™ 2000, COM+, ASP (Active Server Pages for building Web pages), the Visual Studio® development system, and Compaq Proliant 8500 servers with up to eight Intel Pentium III Xeon processors.

eXtensible Markup Language is another crucial component of the FreeMarkets framework, allowing FreeMarkets to develop common interfaces, services, and data models. Tight integration of the technologies throughout the system allows the development of a solution built on Windows 2000 to serve as a common operating environment with integrated services, interfaces, and technologies.

"[Windows 2000] Datacenter Server allows us to dynamically scale to meet customer demands, which means we can offer more concurrent auctions, and effectively increase our market both vertically and horizontally," says John Benzinger, director of technical operations. "If our auction volume continues to grow as it has in the past—60% quarterly growth—then FreeMarkets will be able to conduct more auctions and offer our services 24/7/365 around the world, while continuing to reduce costs for IT operations." ◼

PROBLEM:
FreeMarkets, an operator of business-to-business online auctions, knew that high availability was critical to its continued success. Although it already had a 99.9% up-time rate, FreeMarkets sought even greater availability, as well as scalability to meet growing capacity demands.

SOLUTION:
FreeMarkets implemented Microsoft Windows 2000 Datacenter Server, part of the Microsoft .NET Enterprise Server family that promotes any time, anywhere, any device computing. The company now enjoys 99.999% up-time. FreeMarkets is gradually phasing out its Windows NT-based servers and replacing them with clusters running Windows 2000 Datacenter Server, which will further improve upon its ability to distribute workloads and manage the influx of orders flowing through its system.

Commerx Inc.

Founded in 1995, Chicago-based Commerx Inc. is an Internet marketplace developer and provider of e-commerce solutions for industrial processing markets. Its flagship e-marketplace, PlasticsNet, originally served as an "infomediary" and sourcing guide for companies in the plastics industry. The globalization and growth of the plastics industry prompted Commerx to turn the site into a business-to-business (B2B) e-commerce marketplace that would help companies transact business online.

Today, its PlasticsNet Web site, which allows plastics professionals to purchase resins and equipment, find or advertise employment opportunities, receive online training, and browse industry news and an online directory of buyers and sellers, attracts about 70,000 visitors each month. Customers can purchase materials from multiple suppliers—all on one purchase order. Moreover, buyers enjoy reduced fulfillment costs because sellers pay set-up and transaction fees.

solution alternatives, but found no compelling reason to move away from the Microsoft platform."

Commerx formed alliances with technology partners, such as enterprise resource planning provider J.D. Edwards, to back PlasticsNet. JDE solutions facilitate order entry, providing customers with pricing, sales tax, freight calculations, and billing and delivery preferences in real time as they place an order. Plastics buyers can also track orders through JDE's Customer Service Management System.

"J.D. Edwards' advanced pricing capabilities and malleable technology architecture allowed us to shape our system to do what we really wanted," says Justin Dye, director of operations at Commerx. "True to their outstanding background in partnering with companies, J.D. Edwards is helping us become the poster child for B2B e-commerce."

Commerx picked Deloitte Consulting for implementation support, program management, and infrastructure support services. Deloitte worked with

B2B Site Puts Servers to the Test

A SUPPORT SYSTEM

When it began adding these functions in late 1998, Commerx knew that its plans would require expanding the site's core infrastructure components and enhancing its capabilities to support ever-increasing traffic and new product and service offerings. Building a system that could support growth in the explosive B2B e-commerce market meant choosing a reliable, scalable platform with high availability.

"We started out as a very small Web presence and believe that the Microsoft® products actually helped us grow as the scope of our services and our customer base demanded more from us," says Mike Sorensen, director of information technology at Commerx. "When it was time to expand our system, we researched other

Commerx's system engineers to integrate suppliers and distributors onto the PlasticsNet Web site, and supported software configuration to deploy PlasticsNet.Com as a procurement channel.

To help with the implementation, Commerx used the I-Market business model from Computer Sciences Corp., an e-commerce consulting firm. Delano Technology Corp.'s e-business interaction suite serves as the mail application platform, and eCredit.com's global financing network offers buyers instant credit and financing information and transaction completion capabilities.

Finally, a suite of services from TradingDynamics provides buyers and sellers with three dynamic pricing mech-

anisms: auction (one seller to many buyers), reverse auction (one buyer to many sellers), and exchange (many buyers and many sellers).

To integrate these technologies into a distributed computing solution, Commerx selected Compaq server hardware and the Microsoft platform. It was clear that only the Microsoft platform offered ease of implementation, interoperability, and short time to market.

"We chose Microsoft technologies because we needed rapid deployment and a cost-effective solution. We couldn't find that with any other technologies we looked at," says Chris Borneman, chief technology officer for Commerx. "Our focus was on building a business solution; we didn't have the time or resources to be system integrators. The Microsoft strategy was cohesive—it gave us a single solution for tying together a lot of data points. The system is scalable and completely meets our needs."

Rapid implementation is necessary in the competitive Internet industry. Using the Microsoft platform enabled Commerx to build a distributed, scalable, multi-tier application and to quickly scale its Web site from two simple desktop servers to 30 Compaq ProLiant servers in just six months.

The 30 servers are running Windows NT® Server 4.0 operating system Enterprise Edition and are powered by Microsoft Site Server Commerce Edition 3.0. All databases are based on Microsoft SQL Server™ 7.0 Enterprise Edition, while Microsoft Exchange Server Enterprise Edition provides all of the messaging functionality. The site's robust middle tier was built with the Microsoft Visual Basic® development system, Microsoft Transaction Server, and Microsoft Message Queue Server. Web development was done in Active Server Pages.

According to Sorensen, "Using Microsoft as the single source for software really accelerated our ability to integrate all of our different processes together—they've done a great job of taking multiple technology offerings and tying them together. This really increased our productivity on the developer side of things."

PROBLEM:

Seeing a need for an Internet community for the plastics industry, Commerx wanted to add e-commerce functionality to its PlasticsNet Web site. It was apparent that moving in this direction called for greater system scalability to support increasing Web traffic and product offerings.

SOLUTION:

Commerx worked with Computer Sciences Corp. and other technology partners, and implemented technologies within the Microsoft family of server products—including Microsoft Windows NT Server Enterprise Edition, Microsoft SQL Server Enterprise Edition, and Microsoft Site Server Commerce Edition—to add e-commerce functionality to PlasticsNet. It scaled the site from two servers to 30 high-availability Compaq servers in just six months, and the Microsoft platform helped Commerx bring its expanded site to market quickly.

97% of the PlasticsNet site is dynamically driven by its database—potent testimony to the scalability of the Microsoft server applications.

In the early stages of implementing its new system, Commerx was surprised at how scalable Windows NT Server and SQL Server were. Commerx has conducted formal load testing of SQL Server, which has processed $25 million worth of transactions per hour without experiencing performance degradations. Despite Commerx's best efforts to break SQL Server, it has exceeded all scalability expectations.

Commerx is now deploying Windows

HIGH VOLUMES, HIGH SYSTEM STABILITY

As for systems stability, Sorenson says that Commerx has not experienced a single service outage associated with the operating system or the Microsoft technology. Although PlasticsNet now receives 2.5 million hits per month per server, Commerx is still at less than 30% utilization on its Web servers and less than 5% utilization on its database servers. This is despite the fact that

2000. "We are looking forward to working with the next generation of Windows software," says Borneman. "What excites us most about Windows 2000 is where Microsoft is going with clustering and application center technology. We're looking forward to using its improved management tools to give us high availability of the Web sites, high availability of business logic, and to scale it both vertically and horizontally across servers." ■

The U.K. division of Siemens Automation and Drives, the global supplier of automation technology, has used electronic data interchange (EDI) trading technology for years. It has been a great boon to its clients, offering significant increases in efficiency and productivity. But these advantages were available only to Siemens' largest trading partners, primarily because of cost.

EDI technology is expensive, keeping smaller enterprises out of the loop. But the advent of new technologies and the Internet have changed all that. Now even the smallest enterprises can leverage the advantages of speed, efficiency, and common electronic language that the Internet provides, just like the big guys.

Aware of this technology shift and its potential benefits, Siemens wanted a solution that would let all its trading partners take advantage of the benefits of electronic trading—improving efficiency and allowing the tracing and control of goods as they moved through the supply chain. It wanted its partners and clients—regardless of size—to have the ability to order products electronically and manage and exchange trading data via the Internet.

But developing such a system is time-consuming. Rather than take its focus away from its core business and spend an extended period developing the applications in-house, Siemens elected to outsource the project to Kewill Systems, which had already developed Kewill.Net, its own successful business-to-business portal. Kewill.Net comprises a number of applications designed for specific areas within the supply chain. Kewill Systems worked with Siemens to develop SmartTrader, a branded version of Kewill.Trade Demand supply chain management application.

Siemens Automation and Drives

Complete Supply Chain Linkage

With the SmartTrader system, wholesalers, distributors, and original equipment manufacturers can gather quotes, check orders, make purchases, monitor order status, and view delivery schedules through a common channel—at a much lower cost than a traditional EDI system. By leveraging Kewill's expertise in hosting supply chain management solutions, Siemens got its system up and running within a month of implementation, enabling the company to begin reaping the benefits of the implementation almost immediately.

THE BANG FOR SIEMENS' BUCK

With SmartTrader, Siemens' customers can conduct business regardless of whether they employ EDI, or eXtensible Markup Language (XML), or simply access the portal with a Web browser, according to Mathew Buskell, market manager with Kewill. Customers can also prepare orders offline. These can then be imported into the system where prices are calculated and the order is validated immediately. In short, the system provides a much faster, cheaper, and more accurate way to fulfill orders, which, in turn, enables Siemens to concentrate more of its efforts in developing and enhancing its customer services.
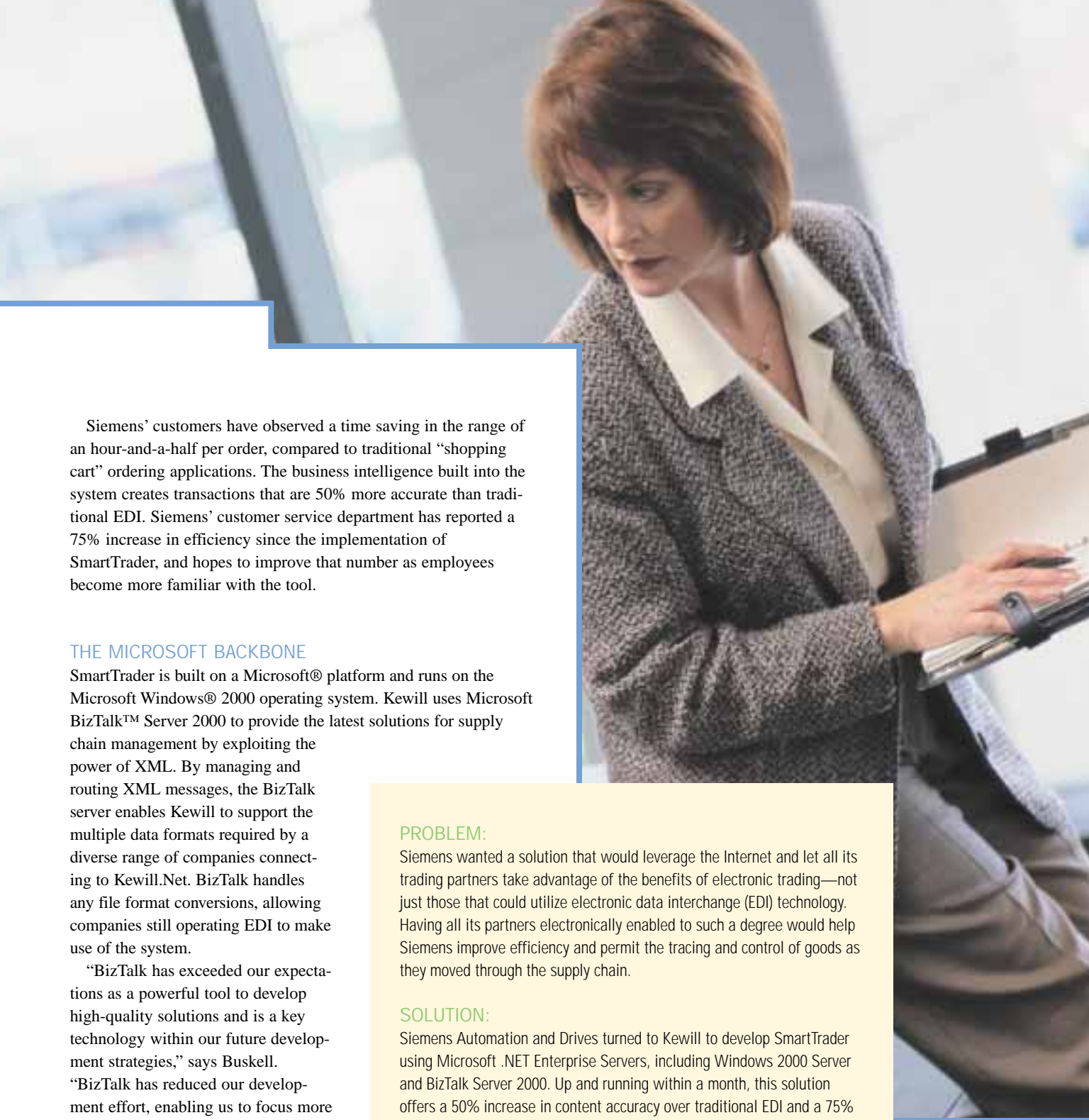
Siemens' customers have observed a time saving in the range of an hour-and-a-half per order, compared to traditional "shopping cart" ordering applications. The business intelligence built into the system creates transactions that are 50% more accurate than traditional EDI. Siemens' customer service department has reported a 75% increase in efficiency since the implementation of SmartTrader, and hopes to improve that number as employees become more familiar with the tool.

THE MICROSOFT BACKBONE

SmartTrader is built on a Microsoft® platform and runs on the Microsoft Windows® 2000 operating system. Kewill uses Microsoft BizTalk™ Server 2000 to provide the latest solutions for supply chain management by exploiting the power of XML. By managing and routing XML messages, the BizTalk server enables Kewill to support the multiple data formats required by a diverse range of companies connecting to Kewill.Net. BizTalk handles any file format conversions, allowing companies still operating EDI to make use of the system.

"BizTalk has exceeded our expectations as a powerful tool to develop high-quality solutions and is a key technology within our future development strategies," says Buskell. "BizTalk has reduced our development effort, enabling us to focus more heavily on understanding the complex business processes that exist within the supply chain."

For Siemens' U.K. Automation and Drives division, outsourcing to a Microsoft .NET-based host portal has greatly improved its customer service and brought 21st century efficiency to even its smallest trading partners. Ian Bowman, group marketing manager, says, "SmartTrader gives our customers the benefits of electronic trading with minimal cost. The system reduces time spent by all in non-value-added ordering tasks." ■

PROBLEM:

Siemens wanted a solution that would leverage the Internet and let all its trading partners take advantage of the benefits of electronic trading—not just those that could utilize electronic data interchange (EDI) technology. Having all its partners electronically enabled to such a degree would help Siemens improve efficiency and permit the tracing and control of goods as they moved through the supply chain.

SOLUTION:

Siemens Automation and Drives turned to Kewill to develop SmartTrader using Microsoft .NET Enterprise Servers, including Windows 2000 Server and BizTalk Server 2000. Up and running within a month, this solution offers a 50% increase in content accuracy over traditional EDI and a 75% increase in efficiency in the customer service department, while enabling buyers to gather quotes, check orders, make purchases, monitor order status, and view delivery schedules through a common channel.

Procurement and Finance:
How Agile Are You?

IS YOUR ORGANIZATION…

Issuing orders and effecting payment electronically to suppliers or e-marketplaces securely over the Internet?

Seamlessly updating supply chain execution, inventory management, production, accounting, logistics, and fulfillment systems as supplier shipments are received?

Securely, yet broadly, delivering up-to-date personalized financial, customer order, inventory, and purchasing information or alerts out to employees, partners, and customers across the extended manufacturing enterprise?

Routing documents such as requests for purchase, purchase orders, and order confirmations between your suppliers, e-marketplaces, and your systems seamlessly using XML and the Internet?

Providing customized real-time dashboards that track performance against key metrics and overall enterprise initiatives from information contained within financial and procurement systems?

Easily identifying inventory and capital equipment overages or shortages and providing the collaborative capabilities for efficient and effective action to resolve these problems?

Offering employees the ability to easily find, procure, and pay for supplies and equipment via an intranet with approved vendors at the lowest price with appropriate workflow capabilities to handle approval processes?

Tracking, analyzing, and managing suppliers by bringing together key supplier information such as quality, timeliness, pricing, financial, and other key factors for accessing performance and better managing suppliers?

Automating the product re-ordering and replenishment process where appropriate with key suppliers leveraging the Internet?

Fully leveraging partner and supplier capabilities to help reduce inventory and capital expenditure through collaboration and secure data exchange over the Internet?