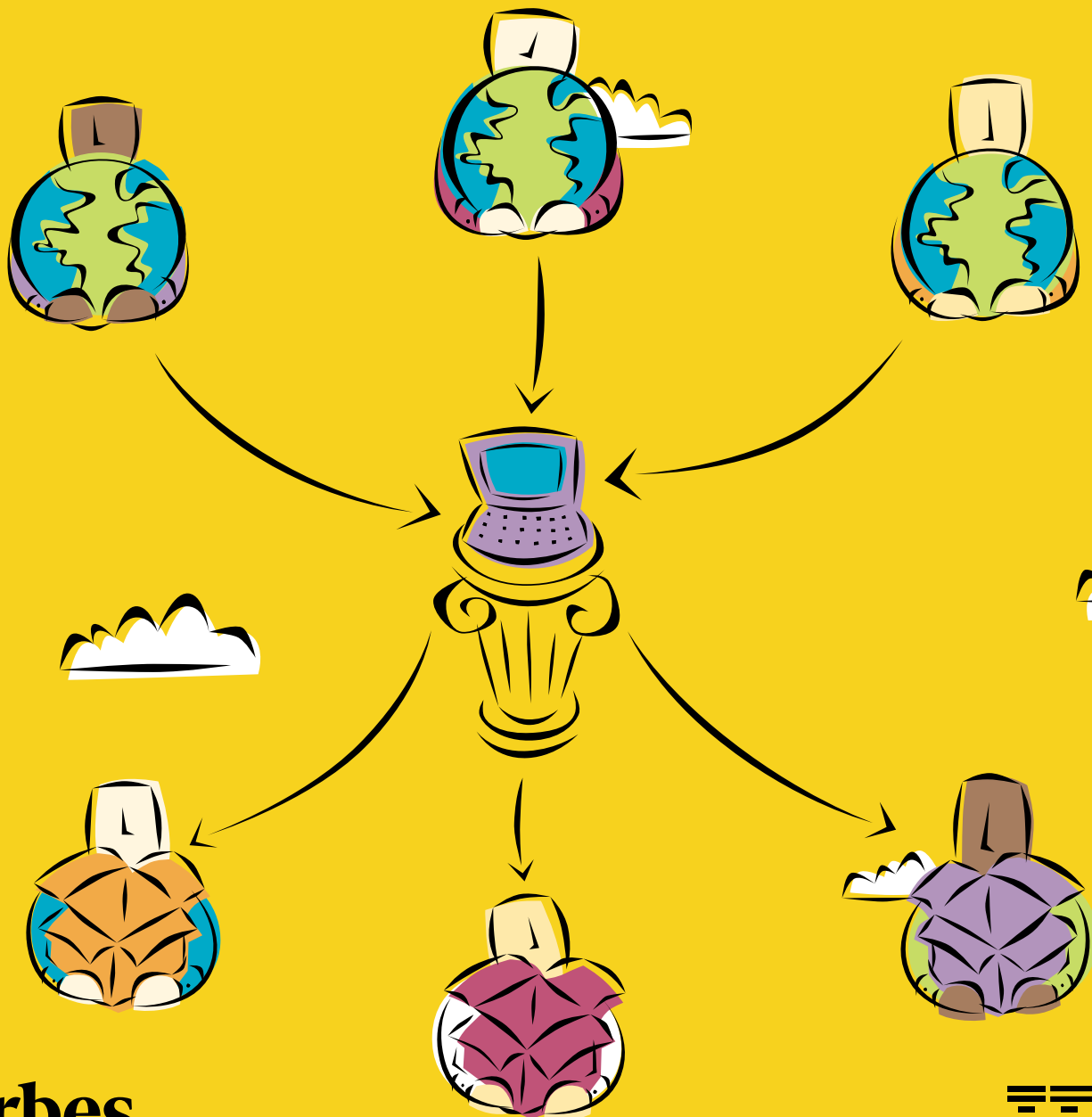


# Transform Your Business Through B2B e-commerce







# The Internet, e-markets and The Age of Opportunity

For enterprises of all sizes, the Internet has ushered in a new age of opportunity. Companies that only a year ago were not ready to fully embrace new business models or to transfer many of their business processes onto the Web are seeing an evolving picture of the future in which their organizations must play a role or risk losing out to their competitors. The Internet may become just another sales channel — albeit an important one — for business-to-consumer (B2C) commerce, but it has already become the *major* channel for communications and transactions in business-to-business (B2B) trade.

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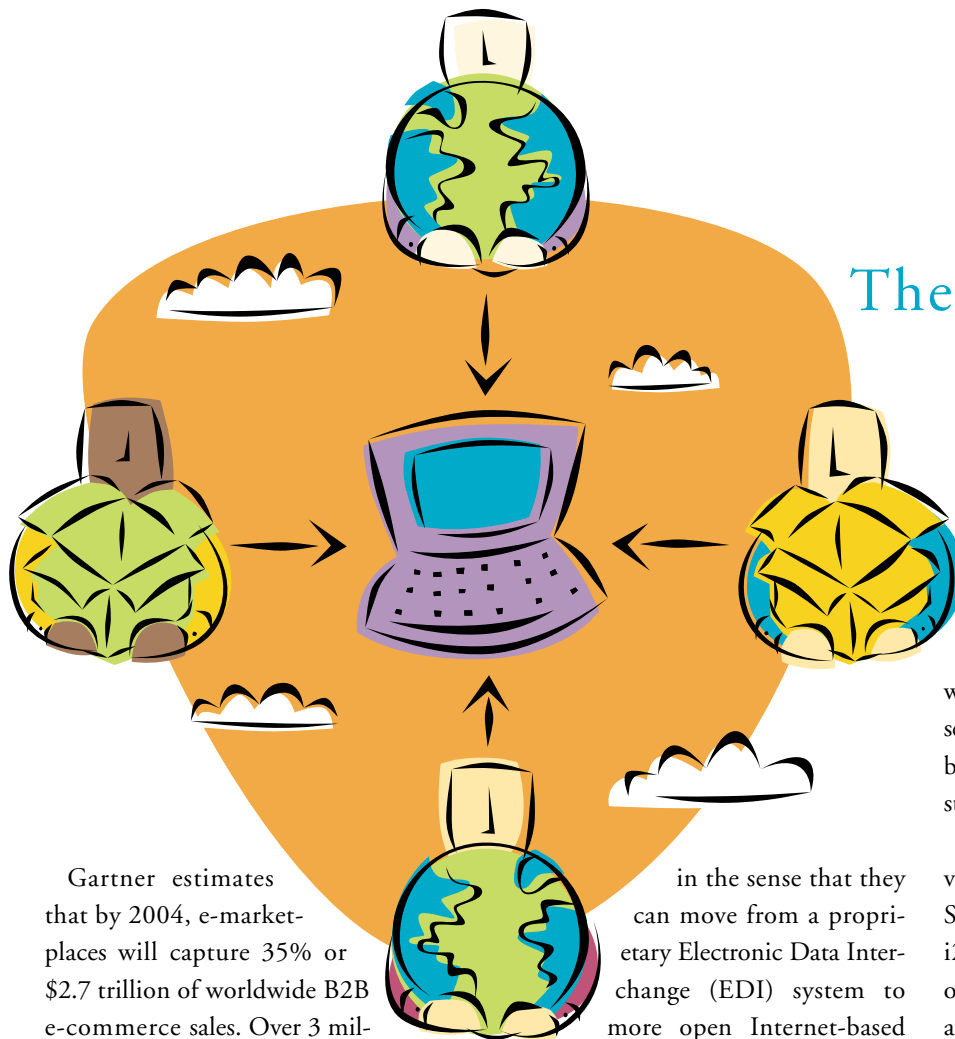
“Many executives who were not convinced that the Web was the future of business and felt that most of the focus was on B2C have begun to recognize that the Internet offers tremendous potential as a way to increase efficiencies and reduce costs, especially in areas like billing, procurement and supply chain processes,” says Pat Toole, general manager of B2B solutions at IBM. “The emergence of Net markets in virtually every vertical industry, plus a growing understanding of how supply chain collaboration can save money, have made companies that couldn’t imagine a couple of years ago how the Web would affect them to re-evaluate their positions.”

And e-commerce continues to grow at an explosive pace. AMR Research’s latest study indicates that B2B e-commerce will be adopted at a more accelerated rate than many companies realize, reaching \$5.7 trillion by 2004. The firm estimates that industry leaders will move 60% to 100% of their transactions to the Internet over the next two years. AMR says companies that do not take an aggressive approach to B2B e-commerce and prepare for digital marketplaces will lose customers and ultimately fail.

Other research firms agree. Most U.S. firms will be transacting business on the Internet in two years, drawn online by a host of compelling cross-organization

process efficiencies, according to Forrester Research. Gartner (the IT research and consulting firm) says that the worldwide B2B market will grow from \$145 billion in 1999 to \$7.29 trillion in 2004, at which time it will represent 7% of the forecasted \$105 trillion total global sales transactions. By contrast, B2C sales in 1999 reached only \$20 billion, according to Forrester. Deloitte Consulting predicts that by 2008, B2B sales will be six times that of B2C sales.

In addition to trading between partners as part of a closed network or extranet, a key component of growth will be e-marketplaces, which are new electronic business-to-business exchanges designed to allow multiple buyers and sellers to dynamically exchange goods and services that reduce costs and streamline their supply chains. Digital markets create new ways of doing business in traditional industries such as industrial shipping, papers and chemicals, where the process of buying and selling commodity-like products was previously complex and time-consuming. Buyers and sellers can meet on a virtual trading floor and transact as quickly and efficiently as commodities traders do, using a variety of market-making mechanisms ranging from fixed-price such as catalog purchasing to dynamic pricing mechanisms that include auctions, exchanges and barter.



## The Internet, e-markets The

Gartner estimates that by 2004, e-marketplaces will capture 35% or \$2.7 trillion of worldwide B2B e-commerce sales. Over 3 million sellers are expected to participate in e-marketplaces by that time. In a Forrester survey of executives at large companies, a growing number said they expect to both buy and sell via e-marketplaces. Today, 26% of these firms use e-marketplaces to buy products and 18% use them to sell products, but by 2002, 69% will buy and 71% plan to sell through this channel. By 2004, 53% of the total B2B e-commerce trade is anticipated to take place on e-marketplaces.

“E-marketplaces provide such tremendous value to companies in terms of speed and simplicity,” Toole says. “Speed in that they can just do so many processes faster through exchanges than they can do using traditional methods; simplicity

in the sense that they can move from a proprietary Electronic Data Interchange (EDI) system to more open Internet-based methods. Business processes are evolving to the point where some of the processes themselves are actually contained in the

network. It just makes it easier for companies to do business.”

Although dozens of marketplace “platform” vendors have emerged to help customers build or connect to existing marketplaces, few have all the resources necessary to provide the kind of total solution that will be needed as marketplaces assume a larger role in supply chain optimization. As a result, many market makers have turned to technology alliances such as that formed by IBM,

i2 and Ariba. That combination provides a complete solution for supply chain management and e-procurement, running on IBM middleware — which allows integration of the buyer, seller and the marketplace — and backed by IBM’s comprehensive services and support.

“The alliance is about creating greater value for our customers,” says Sanjiv Sidhu, chairman and chief executive of i2. “Right now, B2B marketplaces are only addressing about 5% of the transactions businesses do with one another. Money is being left on the table, and there is more value that can be derived from working together.”

## The real payoff will come as companies acquire both buy- begin adding support for the collaborative, long-running

In the first three months of the alliance, IBM and its partners won contracts with ten major industry consortiums. They include e2Open.com, an electronics exchange backed by such players as Hitachi, Nortel Networks and Toshiba; the World Wide Retail Exchange, a marketplace being built by 22 of the world’s largest retailers; and a marketplace being built by seven of the world’s largest tire companies, called RubberNetwork.com.

# and Age of Opportunity

“What these industry consortia are looking for is a solution that covers all of their needs, from up-front consulting to business design and strategy through to the applications and on to integration to the back end, customization and ongoing operations,” says Karl Salnoske, vice president of e-procurement services for IBM Global Services. “Ariba does a real good job of providing buy-side software for the indirect spend and marketplace software for running exchanges; i2 fills in the gaps around that with its supply chain planning and management applications. We understand supply chain, we understand their industry. Our middleware is the glue that holds it all together. I also think cus-

alone to gain the market, the trio is partnering with other e-business software providers and therefore gains more functionality and complexity,” says Gerard.

Experts believe the real payoff will come as companies acquire both buy-side and sell-side capability and market makers begin adding support for the collaborative, long-running transactions and custom business processes that characterize the trade of direct goods, capital equipment and services. Statistics from The Center for Advanced Purchasing Studies show that this currently underserved market represents over 75% of all B2B spending

## side and sell-side capability and market makers transactions and custom business processes.

tomers have a lot of confidence in our abilities in consulting, systems integration and business process change skills. Together, it is a complete, seamless package.”

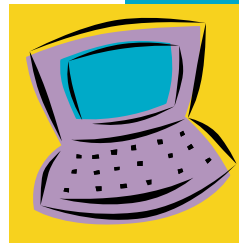
AMR Research analyst Greg Gerard says that Oracle and IBM/Ariba/i2 are the main players in the e-commerce market space today, having long overtaken the Microsoft/CommerceOne/Anderesen Consulting consortium. Ultimately, Gerard predicts that the IBM team will win the race. “While Oracle is fighting

across 17 major industries.

“The dramatic growth in direct procurement and emerging e-marketplaces with their growing demand for interoperability with partners, suppliers and customers will necessitate an ability to integrate across software platforms and with legacy systems,” Salnoske says. “IBM’s open B2B platform allows users to engage in widespread, ad hoc e-commerce with unlimited trading partners on the Internet at large.”

## B2B Marketplace: Chemdex

Chemdex is an online marketplace that brings together life sciences enterprises, researchers and suppliers to efficiently buy and sell products on the Web, streamline business processes, enhance productivity and reduce costs. Acting as a Net Market Maker for 2,000 suppliers and thousands of researchers in more than 70 enterprises, Chemdex offers nearly a million individual products in an extensive online marketplace and procurement application tailored to the unique business requirements of each customer.



Building on a UNIX base, Chemdex chose IBM’s WebSphere® Application Server to handle its catalog and procurement application, and IBM VisualAge® for Java™ as the development tool. Chemdex’s architecture is designed to easily absorb spikes in growth. WebSphere and VisualAge for Java’s open standards provide flexibility and portability to the front end of the Chemdex Web site, allowing Chemdex to manipulate its platforms as necessary.

“We chose WebSphere because of IBM’s commitment to building a platform that is hardware/operating system independent, highly scalable and has the portability of Java,” says Pierre Samec, Chemdex’s chief information officer.

# Putting the Pieces Together

The Internet is transforming cross-enterprise processes in the same way that reengineering and ERP transformed the enterprise. Collaborative commerce is rapidly becoming the norm. Over the next few years there will be greater and greater business process integration between companies. Many companies are already reaping significant benefits using only the Internet as a technology enabler. The biggest potential benefit is a more synchronized supply chain, which yields better customer service, higher quality products, lower inventory and faster delivery.

“We are undergoing a strong surge in business-to-business integration to streamline workflow, introduce efficiencies and reduce costs,” says IBM’s Toole. “But business partnerships are changing much more frequently than in the past and more applications are constantly being added. Thus, a dynamic integration strategy is needed, as well as an open infrastructure that allows companies to integrate and exploit business processes — from supply chain management to handling high-volume Web transactions in a B2B e-marketplace.”

A Meta Group report estimates that this year companies will spend \$1.8 billion on integration products and services and that that figure will grow to \$9.1 billion by 2004. According to Forrester Research, integration projects sap 30% of information technology development budgets at global 2,500 corporations. In addition, many companies run on at least three different operating systems,

further complicating business integration.

“To take full advantage of the network architecture of Web-based applications,” says Ed Kilroy, general manager of IBM’s electronic commerce software solutions division, “companies need to keep their options open and not get locked into technology so proprietary that it doesn’t play well with others. The winners in the Internet economy will be those who can connect best with suppliers, customers and trading partners.”

Most marketplaces also need better links with the legacy systems of their trading partners. Few business-to-business marketplaces provide integration with their participants’ back-end systems. Of the 600 exchanges tracked by AMR Research, only 10 have application integration built into the exchange. That means many marketplaces fall short on their promise of huge efficiencies.

“If marketplaces and business Webs are built on proprietary technology, they will

wind up being a bunch of stand-alone islands,” Kilroy says. “No matter how big they are, there will be little payback for buyers and sellers that join if they don’t interoperate. That makes infrastructure critical to any company’s e-business strategy. One of our major focuses is on creating applications that make it possible to communicate with other networks.”

The growing need for networked collaboration has made a rather unglamorous application called middleware one of the most important software technologies to emerge in the Internet era. Middleware is the layer of software between computer operating systems and Web applications that holds together such services as identification, authentication, authorization, directories and security and allows otherwise conflicting applications to work together. But middleware and business process integration are complex, so more and more companies are turning to plug-and-play solutions like IBM’s WebSphere software platform, which has evolved from a family of Web application servers to a complete family of end-to-end e-business software.

“Today’s customers want faster, more cost-effective implementations of their middleware tools,” wrote Sam Albert in *ZDNet*. He is president of Sam Albert Associates in Scarsdale, N.Y., a firm specializing in developing strategic corporate relationships. “That’s where I see IBM picking up the ball. The purpose of IBM’s WebSphere is to integrate components in the Web environment with the rest of a company’s business operations, such as



inventory, ordering and so forth . . . IBM has what it takes to help customers run sophisticated applications while preserving legacy investments; or in other words, integrate and connect new applications with their existing ones. The desired result, of course, is 'e-enabled' operations at every level of a business."

WebSphere combines two of the industry-leading middleware technologies — Web application serving and integration — as well as a cohesive array of e-commerce, Web development and management services under the WebSphere brand. Companies building marketplaces will be able to pick and choose the modules they need and quickly get something to market.

"What we are saying is, don't try to go out and build your own stand-alone marketplace," Kilroy explains. "You don't have

to search out the pieces or worry about how they'll all fit. WebSphere already has the

industry's broadest, best-integrated middleware package. We can supply the entire infrastructure. Spend your time and money on the applications that will make your market the industry leader."

"Ariba, IBM and Cisco recognize the need to help mid-sized suppliers compete within the global e-commerce market, and we are the first to meet that need with a single integrated solution," says Cindy Elkins, senior director, global supplier and content solutions, Ariba. "With the addition of our Ariba SupplierLive solutions for mid-tier suppliers, we now have a complete set of solutions to meet the needs of all suppliers, regardless of their size or level of e-commerce experience and requirements."

## Middleware: Whirlpool

When Whirlpool, the \$10.5 billion global appliances giant, wanted to build a B2B trading partner portal for its middle-tier trade partners — which comprise 25% of its total partner base — it turned to IBM for help. These are the sellers who generate 10% of the company's revenue but aren't large enough to have dedicated, system-to-system connections with Whirlpool, so they typically submitted orders by phone or fax.

To make the portal work, the company needed to integrate it with its SAP R/3 inventory system and Tivoli systems management tools. Following the guidelines of the IBM Application Framework for e-business, Whirlpool built its portal with IBM WebSphere Application Server, Advanced Edition, IBM Net.Commerce™ (now part of the IBM WebSphere Commerce Suite family), IBM HTTP Server, IBM VisualAge for Java and IBM Commerce Integrator with the IBM MQSeries® of middleware tools.

Working in concert, these technologies have enabled a fast, easy Web self-service ordering process that has cut the cost per order to under \$5 — a savings of at least 80%. Whirlpool has also gained an unexpected benefit — an extendable e-business platform that it plans to leverage for other applications.

"IBM e-business solutions run on many different platforms that scale from the very small to the very large," says Jim Haney, vice president of architecture and planning at Whirlpool. "When you've got that level of scalability as well as flexibility, that's pretty powerful."



# Weaving the Wireless Web

Ask Dave Cassano, vice president of wireless solutions at IBM, what the next big breakthrough in e-business will be, and the answer is immediate: mobile commerce.

“Start with the idea that there are already about twice as many people in the world who use cell telephones as there are people with PCs who access the Internet,” Cassano says. “Not only that, but the number of users is growing twice as fast and the technologies are changing so rapidly that you really could have three quarters of a billion devices connected to the Internet literally within the next two to three years.”

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Cassano is hardly alone in his view of the market. Aberdeen Group, a leading provider of marketing strategy and IT consulting, predicts that in 2004, 74 million users — one-third of all wireless subscribers — will access the wireless Web. The figures are even higher if you listen to research firm International Data Corp. (IDC). It puts mobile phone usage at 1 billion by 2003, with all phones Internet-enabled by 2001.

Add to that the number of Internet-enabled personal digital assistants (PDAs) and IBM’s pioneering “pervasive computing” vision seems about to become a reality. IDC expects the market for PDAs

to grow 55.9% in 2000, up from 26.6% growth in 1999 and the 27.8% annual growth rate expected for 2000 to 2004.

Out of all this activity, mobile elec-

## When you can be notified, before you leave for the point, or that the Rolling Stones are coming to town

tronic commerce (m-commerce) has emerged as the next big thing. M-commerce is being made possible by new technologies that allow mobile phones and other handheld devices to access the Internet. This creates a vast new potential channel for e-commerce. People will soon be able to use their mobile phones

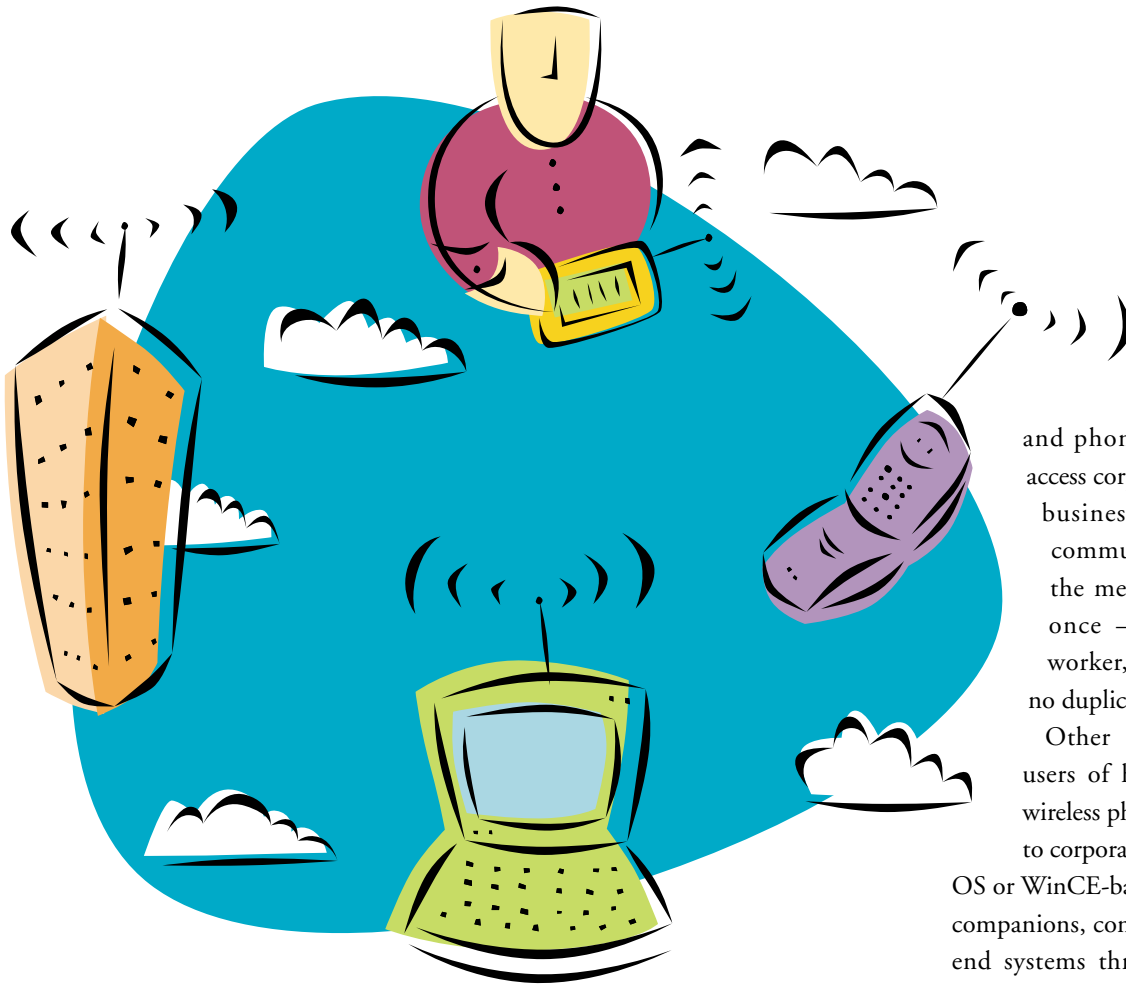
and other Web-enabled devices to carry out their business and generate revenue wherever they are and whenever they want.

“In a few years, more than 60% of all Web transactions will be triggered by wireless devices, making mobile e-commerce a tremendous opportunity for businesses to provide new personalized, location-based services over the Internet,” Cassano says. “There is a whole set of new applications being developed for these small, portable mobile devices — that are always on and in your pocket — that will ultimately make them practically indispensable for a wide range of transactions.”

For example, Cassano says, the kinds of things users can do now with an Internet-enabled phone — read the news, sports, weather, get a stock quote — may

not be all that interesting. But when you can be notified, before you leave for the airport, that your flight has been cancelled, or that a stock has reached a sell point, or that the Rolling Stones are coming to town and you can buy a couple of tickets right then online, it gets a lot more exciting.





“All of a sudden the notion that you have to wait until you get to your PC to respond becomes old news,” says Cas-

sano. “All of these new services will be highly personalized and location sensitive. In the next two to three years, we’re going to see a groundswell of new applications that will make m-commerce a major business driver.”

phones and PDAs to communicate from the network to a company’s applications. Middleware for pervasive devices enables

reliable transactional capabilities to access mainstream business applications and corporate data via handheld devices, wherever mobile users happen to be. That allows mobile workers to communicate with enterprise IT systems just as dependably as office staff. Wherever they are, a traveling workforce can use lap-

tops, servers, PDAs and phones to keep in touch, access corporate data and update business processes. Workers communicate just once and the message is delivered just once — no retries by the worker, no lost messages and no duplicated messages.

Other technologies provide users of handheld devices and wireless phones with direct access to corporate networks using Palm OS or WinCE-based devices as network companions, connecting them to back-end systems through existing digital mobile phone technology.

“The Internet and value-added services on mobile phones and devices have revolutionized access to information for millions of people,” says Cassano. “We increasingly

airport, that your flight has been cancelled, or that a stock has reached a sell and you can buy a couple of tickets right then online, it gets a lot more exciting.

require complete access to time-sensitive data, regardless of where we happen to be. We expect devices — mobile phones, personal digital assistants, office PCs and home entertainment systems — to access that information and work together in one seamless, integrated system. That’s the dream that m-commerce can make into a reality.”

## Internet-Based Procurement

Many Internet-based procurement solutions are “buy-side” applications, focused on indirect purchases — office supplies and routine products and services not used directly in production. To participate, companies need to plug in to someone else’s selling application by joining one of the big supplier networks, like those operated by Ariba, or connecting to third-party net markets.

To make it easier for companies to begin selling online, IBM and many other vendors created a number of “best-of-breed” alliances, such as the IBM Start Now e-commerce Solutions for Ariba SupplierLive package for creating e-commerce sites linked to buyers and marketplaces that are part of the Ariba Commerce Services Network. The SupplierLive solution includes B2B connectivity to the Ariba platform, Cisco Systems’ networking products, IBM’s WebSphere Commerce Suite, IBM’s Netfinity® and AS/400® servers, middleware, services and financing.

# The Open Future

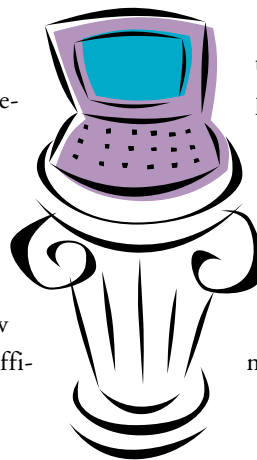
Doing business today requires a flexible approach and the ability to act and respond on the fly. In a networked economy, a key to success is open and scalable technology that supports multiple channels and allows customers and trading partners to connect with you however they choose.

The Internet is challenging all enterprises to adapt and master new environments of change. Networks must extend on demand. Partner and product additions must occur at will. Business rules must be quickly customized. Support for business processes should be comprehensive and include content management, marketing, merchandising, order processing, fulfillment, payment and customer service.

“We’ll see three levels of e-marketplace evolution over the next decade,” says IBM’s Toole. “The first stage involves companies developing true, intercompany business processes that allow them to raise operational effi-

ciency. This will quickly evolve into the next phase in which companies will develop new products and services a lot faster by learning how to collaborate with one another through e-marketplaces. The third stage will be developing true knowledge management among companies, which involves sharing their experiences in the marketplace.”

By implementing a solution that integrates e-commerce as part of your overall business strategy, you can begin to meet customers’ needs, and as a result, differentiate yourself in a crowded marketplace while transforming your company into a winner in the Internet economy. ■



# About IBM

IBM is a global leader in the development and implementation of e-business solutions in strategic areas such as e-commerce, customer relationship management, business intelligence, supply chain management, enterprise resource planning and product design and management. For more information call 1-800-ibm-7080, extension b2b020 or visit [ibm.com/e-business/b2b](http://ibm.com/e-business/b2b).

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