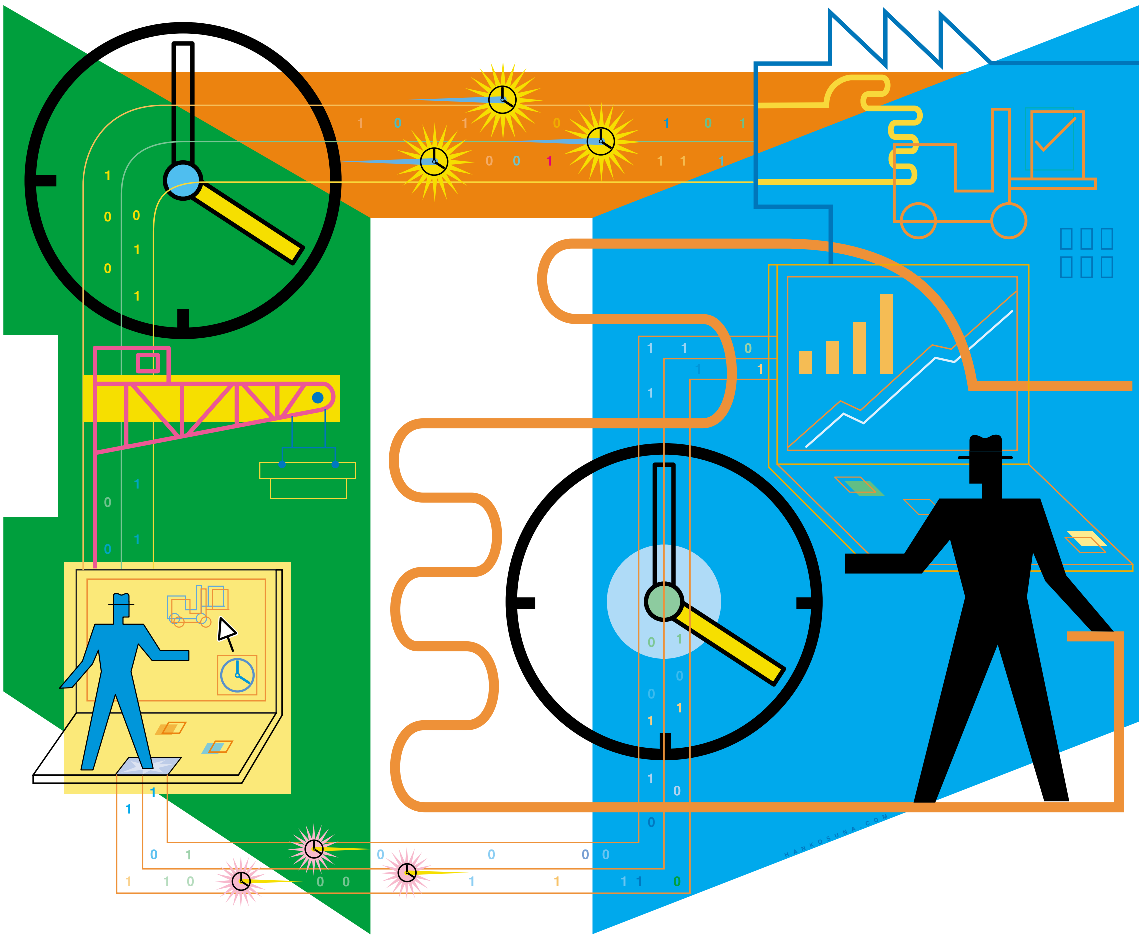
REAL-TIME BUSINESS



KNOWLEDGE, SPEED AND RELATIONSHIPS IN THE NEW ECONOMY

Written and produced by
The Knowledge Capital Group

New imperatives and new technology are forcing companies to rethink their fundamental business assumptions. They are now under pressure to perform at increasingly high speeds – and there's no letting up. Business no longer revolves around plans and projections, large inventories and long lead-times. It is increasingly being driven by impatient customers and intensifying competition. This is the era of Real-Time Business.

Knowledge and speed are the primary forces behind the extraordinary economic expansion that America is now experiencing. Such forces are also beginning to transform the global economy We are doing things smarter and faster than ever before. Business is now ruled by "real-time principles." This concept builds upon and ventures beyond "just-in-time" business concepts that gained attention in the late 1980's. Where "just-in-time" management encouraged companies to explore ways of cutting slack in supply and distribution, "real-time" takes these ideas many steps further. The emerging real-time enterprise will have the ability to rapidly build to-order and create compelling customer solutions, deeply reduce expensive inventories and collaborate with business partners in increasingly powerful new ways.

Companies are now using sophisticated information technologies to understand the unique needs of their customers and gain visibility into their supply networks. And they are using this knowledge to move faster and with greater precision than ever before possible.

Where companies once suffered from ignorance about customer needs and even their own capabilities, they now have insight and real-time intelligence. Where there was once opacity with regard to supply and demand "chains," there is now increasing transparency. The minds of customers are no longer unknowable. Suppliers, distributors and manufacturers no longer act as

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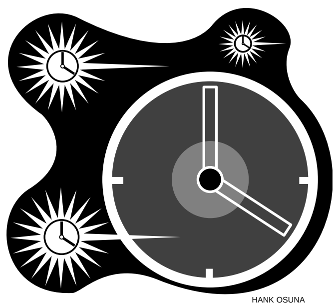
"black boxes" in a long, linear chain of production. We now have the power to see, to analyze and to make effective decisions.

In the real-time era, companies are focused on finding new ways to collaborate not only with their customers but with their suppliers and business partners as well. This turn toward "enterprise relationship management" or "collaborative commerce" promises to dramatically improve the capabilities of companies, enabling them to address the preferences and priorities of their customers in an increasingly impressive way. As companies place ever more attention on their relationships with partners in their networks of supply, their effectiveness in generating customer value and staving off competitors is growing.

Such trends are paying off big in terms of productivity and economic growth. As Federal Reserve Chairman Alan Greenspan explains, "The remarkable surge in the availability of more timely information in recent years has enabled business management to remove large swaths of inventory safety stocks and worker redundancies. Information access in real time… has fostered marked reductions in delivery lead times and the related work hours required for the production and delivery of all sorts of goods."



This may sound like the arcane jargon of an economist, but it is the stuff of economic booms. The ongoing expansion of enterprise knowledge is reducing uncertainty and enabling us all to focus on new wealth-creating forms of activity. "Information technologies, by improving our real-time understanding of production processes and of the vagaries of consumer demand, are reducing the degree of uncertainty and, hence, risk," says Greenspan.

Sound decision-making and the accompanying diminishment of risk enable companies to invest their financial and human capital far more productively. This is showing up in economic statistics, as America's gross national product (GNP) continues to grow at a rapid clip and unemployment falls to record lows.

What will it take to sustain this economic boom – and even broaden its reach? We see several trends on the horizon that promise to create new waves of economic dynamism and enable real-time enterprises to thrive for years to come. Here are some of them:

Enterprise Capabilities Expand. As of late, there has been an extraordinary amount of interest in managing the customer relationship. However, smart companies are learning that they can't effectively address customer needs unless they have a powerful sense of the capabilities they must build, manage and deliver In other words, companies must have the right products, services, talent, capacities and partnerships to match the requirements of their customers. But companies are not simply responding to customer demand. The business world is moving extremely fast and, quite often, customers have no idea what they will want next. Sometimes, companies must help their customers anticipate the changes and innovations that lie ahead. They are not merely "customer-driven"; companies must drive their customers, too. Therefore, capability management is every bit as crucial as customer management. Fortunately, new information technologies are giving companies realtime insight into what their customers need and what products and services they can offer them. Visibility and intelligence are leading to effective decisions and actions.

Information Replaces Inventory. Dramatic changes are happening in the spheres of supply, distribution and logistics. Spurred by innovations in computing and communications, the inventory-to-sales ratio for global business has fallen dramatically over the past two decades. Companies are thinking smarter and finding ways to avoid storing materials that lose considerable value with each passing day. Further, companies are using sophisticated technologies and the assistance of third-party logistics firms to ensure that the capacity of trucks, railcars and container ships is fully and effectively employed. What makes this possible is the ability to manage one's capabilities and partner relationships in real time and match these capacities to the needs of customers.

High-Velocity Markets Eliminate Friction. We see the perpetual drive to eliminate "friction" in the economy and optimize the flow of commerce. In the past, companies have often been able to rely on such factors as geographical proximity, high search costs and customer ignorance to create defensible barriers to entry. But all of that is going away. Consumers are becoming increasingly sophisticated with regard to their options, and so are companies. In fact, this trend – call it "customer leverage" – is even more powerful in the business-to business (BtoB) context. Whether they are procuring materials, products or services, companies are using increasingly effective and productive means to find the resources they need to address the demands of their own customers. This new wave of "intelligent sourcing" – spurred by everything from procurement technologies to the emergence of BtoB marketplaces on the Internet – is having a transformational impact on business.

Companies Embrace Perpetual Change. Today's real-time business environments are forcing companies to transform the way they do business on many levels. Whereas corporate "reorganization" may have seemed like a sign of weakness in the past, it is likely to become a natural part of the change process in the future. In order to capitalize on the new ways of business made possible by the Internet and other trends, companies must institutionalize and embrace change. It must become part of a company's culture. The winners will realize this and treat adaptability as a key differentiator in marketplaces that have surprisingly few. Indeed, the evolution of markets is accelerating, which makes the words of Darwin more relevant than ever: "It is not the strongest species that will survive, nor the most intelligent, but the one most responsive to change."

Relationships Strengthen the Extended Enterprise. The boundaries separating enterprises are becoming increasingly blurred as companies actively collaborate and share information

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to address customer needs. What companies are finding, however, is that they can address more customer needs and do so much more effectively if they create close relationships with their suppliers and partners. In fact, the nature of supply and distribution is changing as a result of such trends. While it's still common to speak of supply "chains," for instance, this appears to be a dated term. There is no single, linear flow of information down a chain anymore. We are instead witnessing the emergence of "networks" of suppliers and trading partners. These networks make information available in real time to all relevant parties to ensure that everyone's actions are aligned. In the years to come, companies must focus on what they do best – their "core competencies" – and rely on partners to help them provide extensive levels of value that will ensure profitability and strengthen customer loyalty If they are to thrive, companies must build powerful and enduring relationships not only with their customers, but with their suppliers and partners as well.

In this supplement, we link the overarching economic gains of recent years, which have certainly been consequential to us all, to the technological trends and business innovations that have fueled the boom. What will begin to emerge is a picture of how investments in business initiatives and information technologies (such as customer relationship management, electronic commerce, supply chain management, procurement and logistics) have contributed to business productivity and widespread economic growth. Assuming companies continue to make such investments and manage change effectively, we expect these favorable trends to continue.

"Real-time business" is a term that we at the Knowledge Capital Group believe reflects the emerging reality of today's economic world. Success now revolves around speed, intelligence and powerful, networked business relationships. In a real-time world, companies must act fast and act smart. They must make change their ally.

Managing Corporate Capabilities

The era of mass markets and mass production revolved around sellers. They created products and then sought to sell them to as many people (or companies) as possible. They treated their customers as an undifferentiated "mass" and, in general, remained blissfully ignorant of the personal wants and needs of individual customers and consumers. More recently, we've witnessed a strong backlash against this business perspective. Heightened competition led to higher customer expectations. Meanwhile, the emergence of new information technologies made it possible to develop deep and personal customer relationships on a large scale. Suddenly, interest had shiNed to the demand-side of the equation and companies were being blasted for their inability to treat the customer like a "king" or recognize that the "customer is always right."

The scale is tipping again. But this time it's coming into balance. Of course, companies cannot simply create products in isolation and expect customers to devour them. Customers now expect to be heard, understood and remembered. What companies are discovering, however, is that it is not enough to merely follow the customer. The customer often relies on the enterprise for insight into what is most appropriate. After all, customers have little time to speculate about what is possible and what comes next. The customer lives in the present; the enterprise that intends to instill customer loyalty must look to the future.

Indeed, the enterprise must watch carefully for "disruptive innovations" in the marketplace that promise to transform whole industries. In his influential research on corporate success and failure, Clayton Christensen, Harvard Business School management professor, made a counter-intuitive discovery that all ambitious companies need to consider. "[W]hen the best firms succeeded, they did so because they listened responsively to their customers and invested aggressively in the technology, products and manufacturing capabilities that satisfied their customers next-generation needs," he writes in his exceptional book, The Innovator's Dilemma (HBS Press, 1997). "But, paradoxically, when the best firms subsequently failed, it was for the same reasons."

In other words, companies leave themselves vulnerable if they follow their customers too closely and become customer-led. The customer, it seems, is not always right.

Much has been said and written about the growing importance of customer relationship management. New initiatives that emphasize the importance of becoming "customer-focused" are now being launched and implemented throughout the corporate world, which is certainly a promising trend. Companies must indeed develop close and powerful bonds with their customers based on

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LEXMARK: REAL-TIME MANUFACTURING

Real-time information management is increasingly critical to the success of manufacturers. Whether they are trying to maintain high standards of product quality or better manage the operations of globally distributed plants, they need immediate access to production and process information in order to make effective decisions.

One company that understands the extraordinary potential associated with such capabilities is Lexmark, the $3 billion manufacturer of electronics and computer printer products. The Lexington, KY-based company, which was formerly part of IBM, recognizes that it can strengthen its competitive position by making its global activities more visible to employees, partners and customers.

Lexmark is currently expanding around the world and is engaged in efforts to create real-time links to facilities in Mexico, Scotland and the Philippines as well as to its plants in the United States. With this in mind, the company is investing heavily in software that allows it to manage and monitor manufacturing activities worldwide.

The company's new system enables it to track work-in-process through detailed reporting on products, labor, resources, performance, production and shipping. Lexmark uses this information to identify bottlenecks and gain a deeper understanding of manufacturing capacity. Such knowledge helps the company meet the

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communication, collaboration and mutual understanding.

But customers cannot and should not be managed in a vacuum. Companies must actively acquire knowledge of evolving trends and innovations in order to remain agile and effective. They must understand their own resources and capabilities as well as those of their partners and suppliers. They need deep insight into their networks of supply and support if they are to determine what types of activities are profitable in the present and which ones will be profitable in the future. They must manage customers and capabilities in parallel. They must simultaneously manage demand and supply.

What does it mean to "manage capabilities"? Well, it's not comparable to the traditional view that had organizations divided into unconnected "departments" based on particular functions. As opposed to creating strict divisions between individuals in product management, research and development, accounting and finance, human resources, manufacturing and other areas of the "back office," this new focus on "capability management" recognizes the importance of ensuring that such professionals share information and collaborate appropriately.

These professionals are managing the capabilities of the enterprise–capabilities that certainly cut across departmental boundaries. Collaboration, therefore, is critical in order to harness the power of these capabilities, processes and resources to great effect. Similar trends are happening in the "front office" as professionals in sales, marketing and service realize they must share information and collaborate to create a powerful and lasting relationship with the customer.

All that said, it's critical to recognize that it's not just the internal, departmental boundaries of the enterprise that are permeable. In the real-time economy, the boundaries separating different enterprises are also beginning to blur Smart companies recognize that they can perform far more effectively if they manage the capabilities that can be delivered by their suppliers and partners.

Companies first began to take advantage of this concept in the 1980's, with the introduction of such concepts as "quick response" and "just in time" – and the implementation of technologies such as electronic data interchange (EDI). All such efforts tended to strengthen the links between corporate buyers and sellers. However, the emergence of the Internet has once again transformed the terms of competition and collaboration. The Internet, which is open and available to all companies at low cost, makes it easier than ever for competitors to jump in and upset cozy relationships built over time.

In some cases, companies will benefit from having an array of suppliers that they can play off each other in order to drive down procurement costs. But price is not the only factor that matters in the new world of business-to-business marketplace relationships. There is value to working closely with one's partners, and by collaborating to cut costs and create new value for customers.

Dell Computer, for instance, builds deep relationships and actively shares information with suppliers of everything from monitors to motherboards in an effort to maximize the whole process of customer value creation. The company creates close connections with suppliers of transportation and logistics services to ensure the final product is delivered on time and on target. By creating stable and strong relationships with its suppliers, Dell has a powerful grasp of exactly

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needs of its customers more effectively and swiftly.

The software, which was developed by Campbell, Calif.-based Camstar, essentially creates a model of all manufacturing processes and enables the company to monitor a product through various production steps. It can also measure product quality, enabling engineers to gain real-time access to information on product tests. This helps the company to identify quality problems before a product is shipped and to take immediate corrective action when defects are detected in components.

At the same time, the new system promises to help Lexmark collaborate more effectively with its customers, many of whom are other manufacturers who have contracted for Lexmark's manufacturing capabilities. The software provides a "real-time window" onto the shop floor, enabling Lexmark and its customers to ensure that work is being completed on-time and as specified. This has been a difficult challenge for both parties in the past. "When customers want to know about order status," says Todd Sills, who leads the company's enterprise manufacturing management software efforts, "they usually must call a salesperson, who must then call the plant and try to determine if the order has been scheduled. Then the salesperson must call the customer back and try to relay pertinent information."

As Sills explains, such activities represent a poor use of financial and human resources. "Salespeople should be selling and manufacturing people should be producing orders," he says. "It isn't productive for salespeople to spend considerable time tracking down and then talking to people about order status. We want complete order status, including shipping information, to be available to the customer electronically at any time."

The new system lets customers gain real-time information as an order moves through the production process toward shipping, enabling them to accurately plan for the delivery of finished goods. As Sills concludes, the system provides "simple, real-time production updates to the enterprise, which makes order information status visible to our customers."

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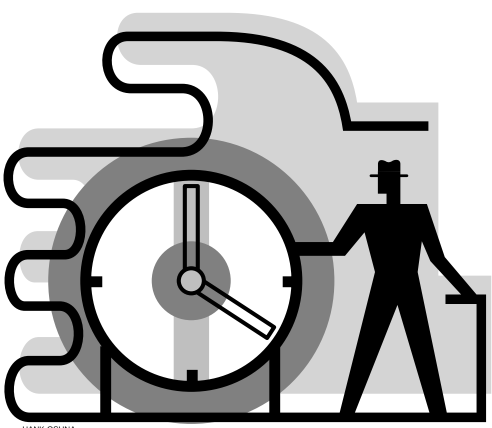
where its extended capabilities lie. Michael Dell, the company's founder and chairman, says that such arrangements demand that suppliers and partners be treated "as if they're inside the company. You're sharing information in a real-time fashion."

Today's real-time availability of information can be traced to heavy investments in information technologies that now do everything from managing accounts to processing orders to unifying widely distributed data. While many technology implementations have proven disappointing over the years and much of the potential associated with such systems is yet to be realized, it's hard to argue that these investments have not contributed to corporate productivity gains. Investments in technologies such as Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Data Warehousing and, of course, Electronic Commerce have all helped to create the current environment of real-time information access and flow.



HANK OSUNA

When companies that have invested in resource management technology take a customer order, the information about that deal now ripples through their systems worldwide and enables them to keep track of promises and expectations. The integration of information and processes–that their investments in sophisticated software made possible–allows them to offer such capabilities as available-to-promise inventory. This means they can match customer orders to their capabilities. They can deliver on time and track the movement of products, parts and components in real time.

They can even use this information to keep track of their financial situation in ways that were never before possible. Cisco Systems, which is now able to close its books within one day, has real-time knowledge of revenues, margins, expenses, orders and other information by geographical region or business unit. The company can now act with speed and agility, enabling it to change course as necessary. It also helps the company manage expectations with Wall Street, which is vital to a company that aggressively uses its stock to acquire other companies.

At the same time, we are witnessing remarkable advances in terms of supply and logistics. Companies have always tried to insulate themselves from volatility and change by maintaining buffers of inventory and capacity While buffers provide insurance against excess demand, they are costly to maintain and prevent companies from acting with agility. When companies have insight into their networks of supply and collaborate with their suppliers, they have an opportunity to radically reduce such inventories and optimize the flow of all goods through the system. They can cut costs, reduce time to market, cut error rates, improve customer satisfaction and generate greater revenue.

Many of these gains can be accomplished through enhanced visibility into channels of demand. Borden Foods, the $3 billion manufacturer of brand-name food products, has implemented a demand planning system that enabled it to reduce forecasting errors by 30%. While it once relied on historical data to manage operations and forecast demand, it now bases decisions on accurate, real-time data on sales, open orders and customer shipments. This enables the company to cut costs in its supply network and accelerate the distribution process. It also facilitates and strengthens communication among Borden's departments and plants. Borden's investments in supply chain solutions have "helped us break down the barriers around our departments," says Katy Fosnaught, Borden's director of demand management. "That's something we can't even put a price tag on."

As such examples demonstrate, corporate investments in software, systems and infrastructure that provide real-time insight are paying off. As they learn to align their customers and capabilities, companies become increasingly productive and profitable. They discover what it takes to be a real-time enterprise.

Information Over Inventory

In recent years, there's been a growing focus on logistics and inventory management as companies discover the powerful results that come from creating a knowledge-intensive network of supply and distribution. Indeed, many successful companies have realized that by managing customer and supplier knowledge more effectively, they can dramatically cut inventories, enhance their products and significantly increase profitability.

Logistics, to be sure, is big business. American companies alone spend more than $900 billion a year on transportation, warehousing and inventory, which is more than 10 percent of the US. gross domestic product. This has created big opportunities for the logistics services industry, which is expected to have rooted out an estimated $so billion in distribution costs between 1996 and the end of 2000, according to Cass Information Systems. The underlying business objective is to cut overall spending on the movement and management of physical goods, creating greater efficiency and effectiveness in the process.

Embracing this new world of real-time logistics management isn't an option; it is essential to business survival. Heightened competition, globalization, diminishing product life cycles and other factors have all converged to create an environment in which speed and efficiency are critical. These factors have also made the movement of information as central to logistics as the movement of goods. The successful real-time enterprise recognizes that there is absolutely no value in allowing products to sit around in warehouses collecting dust. Inventories tie up capital and other resources. They also represent a failure to address the

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urgent call to move materials and products to their destinations at the moment of need. Smart companies are acting on dynamically updated information about customer demand and supplier capabilities to dramatically reduce the wasteful warehousing of physical goods.

Take Procter & Gamble. Several years ago, the company set off a wave of interest in logistics when it cut an important deal with Wal-Mart. Under the terms of the deal, P & G receives specific sales information directly from the retailer and replenishes stock itself. The deal illustrates how critical information sharing is to successful logistics management.

When P & G analyzed data on diaper orders from its manufacturers, it found huge fluctuations in orders for its best-selling product, Pampers. This data seemed incongruous with facts about diaper consumption. Unlike some products, P & G could be fairly certain the customers – in this case the babies – were consuming the diapers at a steady rate (as any mother knows). So why the dramatic ups and downs in the ordering process?

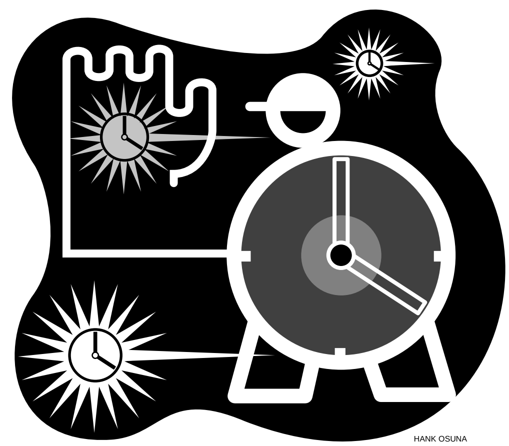
P & G found that the ordering irregularities were caused by the exaggeration of trends at each step of the supply chain. For example, the retailer orders an extra shipment of diapers; the warehouse, in turn, forecasts an upturn in orders from all of its retailers and orders an additional truckload, and so on. Known as the "bullwhip effect," such imprecision leads to a number of bad practices: Excessive inventory; poor product forecasts; insufficient or excessive capacities; poor customer service due to unavailable products or long backlogs; uncertain production planning; and high costs for corrections.

The solution? Dr. Hau Lee, a Stanford University business and engineering professor, says companies must share information throughout a supply network and share forecasting methodologies so that manufacturers and others "upstream" can have greater knowledge of demand at the point of sale. This knowledge sharing stands to benefit all companies in the network, as precise inventory information prevents under- and over-production and allows for accurate warehousing capabilities.

Knowledge, as the masters of logistics have discovered, is the key factor in effective management of supply networks. Lands' End, the well-known catalog merchandiser, hired a third-party logistics service provider to help it manage information about transportation and logistics. It now has real-time access to information about inbound supplier shipments, which total 16,000 each year. The company can track everything from the purchase order to distribution location. Lands' End points to several benefits associated with such solutions. It saves money by ensuring that its transportation purchases are appropriate for the loads it must carry. It increases efficiency and cuts costs by eliminating excess inventory. Finally, the company allocates its human capital more effectively by ensuring its people are focused on value-generating activities.

In order to realize such benefits in supply and logistics, companies must effectively manage daunting amounts of information. With this in mind, it's clear that companies will continue to invest in initiatives, systems and solutions that enable them to manage logistics with precision and effectiveness.

Ironically, much of the value that companies are now adding to the economy will not show up in the statistics we now use to measure the economy's health. These firms are not directly increasing the GNP but, rather, helping companies redirect resources toward more productive uses. Some economists actually take the depletion of inventories as a sign of inevitable price instability, a drag on economic growth. The results, however, speak for themselves. Companies are streamlining their logistics capabilities, squeezing costs out of the system and delivering products in a made-to-order fashion. Information has replaced inventory. Mind has triumphed over matter.



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COVISINT: REINVENTING PROCUREMENT AND SUPPLY, NOT THE WHEEL

The automotive industry is in the midst of a remarkable transformation. At the heart of it is a controversial and much-discussed new venture known as Covisint. The founders of Covisint – General Motors, DaimlerChrysler and Ford – are determined to leverage the capabilities of the Internet to reduce costs and enhance business operations in powerful new ways. Their "business-to-business exchange" is specifically designed to enhance procurement, supply chain and product development activities.

It's a compelling idea – one that continues to attract new participants. In March, Renault/Nissan joined the consortium. Covisint's exchange also depends on its base of trading partners such as BASF, Dana Corporation, Delphi Automotive and Visteon, the world's second largest supplier of integrated automotive systems (with $19.4 billion in revenues in 1999). Analysts believe Covisint has the potential to become the single most important business-to-business enterprise on the Web through its ability to connect manufacturers and suppliers in one networked marketplace.

The Big Three, plus Renault/Nissan, carry equity stakes in Covisint that total more than 50 percent. Oracle Corp. and Commerce One – which are providing software and services to develop the new exchange – own smaller, undisclosed stakes. Covisint participants will pay a subscription fee for the service; sales commissions on transactions will also contribute to the enterprise's revenues. Ultimately, the Internet exchange could prove a highly profitable venture.

What makes Covisint so important and interesting, however, is the emphasis it places on collaboration. It's hard to imagine a group of companies that are more competitive than Detroit's Big Three auto-

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mobile makers. But that isn't stopping them from taking these bold steps together – a move that would once have been unimaginable. Having received the green light from regulatory authorities in America and Germany, Covisint is rapidly being developed.

While the manufacturers intend to continue aggressively competing on such factors as design, service, quality and price, they maintain that they can raise the industry's productivity by working together to create an "integrated supply chain." Covisint, in other words, will enable all manufacturers and suppliers to trade on a single Internet site. This spares the auto manufacturers from having to duplicate each other's efforts by creating their own Internet-based exchanges.

But it also helps many suppliers by giving them one low-cost point of entry for trading with manufacturers and other buyers. Unlike past technologies, designed to link up manufacturers and suppliers, the Internet is easily accessible and relatively easy to use. As a result, the exchange could significantly increase the sales productivity of automotive suppliers.

The exchange also has the potential to cut product cycle times. At this point, it takes as much as 42 months for a product to move from design to roll-out. With Covisint, auto executives expect the cycle to shrink to as little as 12-18 months. That means new cars will be far better adapted to consumer tastes and interests than they have been in the past.

How do participants in Covisint plan to achieve these impressive time savings? Through collaboration. Manufacturers will be able to share their automobile designs and production plans with suppliers in real-time. They will be able to work together online to create sophisticated designs. However, such gains can also be attributed to streamlined procurement procedures. Manufacturers can post their specifications for immediate bids. "Participating suppliers will bid in real time," says Peter Weiss, co-CEO and planning director representing DaimlerChrysler on the Covisint project. "The quotes come back and the buyer makes a decision."

How does the manufacturer decide? "There's an analysis tool tailored to weigh the desired attributes such as price, quality and delivery date," Weiss says. "Everything is on the Covisint channel – the purchase order, the supplier ship dates, and the production schedule. You can see the entire supply chain as the components move through the system. You don't have to second-guess information anymore. You can anticipate. You can make educated decisions because you have real-time data."

With real-time intelligence, information replaces inventory. That means buyers and sellers can reduce their parts inventories as well as delivery times. They can reduce costs, increase profitability and move with far greater agility than was once possible.

By streamlining the procurement processes between buyers and sellers, Covisint will help buyers reduce procurement expenditures. Industry analysts estimate that the processing cost of an average purchase order is about $100. With Covisint's electronic procurement system, that cost is expected to drop to $10 to $20. Suppliers will realize increased efficiencies and greater market reach for their products and services, while manufacturers will have the advantage of a larger supply base and competitive prices. Given the enormity of the auto industry, Covisint could eventually process nearly $500 billion in transactions a year, according to its own forecasts.

High-Velocity Markets

One of the most compelling business trends to watch is the emergence of so-called "digital marketplaces." The Internet has made it possible for both established companies and entrepreneurial challengers to reach out to customers in powerful new ways. While the first big moves in Internet commerce were made by business-to consumer (BtoC) companies such as Amazon.com and Yahoo, we've recently seen interest shift toward business-to-business (BtoB) trade and commerce. The reason? Business commerce accounts for 85% of all U.S. commerce. BancBoston's Robertson Stephenson estimates that BtoB commerce represents 75% of the $80 trillion global market for all products and services.

BtoB opportunities may not be as glamorous as those associated with the "dotcom" era, but the promise seemed vast to those hyping the trend. What emerged were promises to build new "BtoB exchanges" that would allow buyers and sellers to meet online and transact in far more productive ways than they had in the past. New "Net Markets" such as E-Steel, Chemdex and Plasticsnet.com were launched. Some analysts predicted that as many as 10,000 of these new marketplaces would be introduced within the next few years. As the BtoC Internet companies began to fall from grace (and sky-high market valuations literally collapsed), we began to hear grand statements about the rapid and revolutionary impact of the Internet on BtoB commerce. Interestingly, we are already beginning to experience the disappointment and counter-hype associated with BtoB marketplaces.

Business revolutions, as we are learning, do not happen overnight. Which is not to say they don't happen – or that they are not happening faster than they ever have before. It's just that time horizons have become ridiculously short. More importantly, we often seem blind to the incremental and important advances that companies are indeed making on a daily basis. New high-velocity markets emerge; they just aren't emerging the way one might expect.

At present, there's a great deal of turbulence and turmoil among companies that have launched BtoB marketplaces. Net "market makers" are struggling to achieve the "liquidity" – or transaction volume – necessary to keep their operations in business. Companies have launched BtoB marketplaces in a wide array of industrial niches and are now experimenting with many different types of business models and transaction mechanisms. They are putting catalogues online, hosting auctions, and facilitating proposal requests.

What buyers and sellers who are attracted to these new marketplaces are seeking is a new way of doing business. Buyers are looking for opportunities to gain access to new suppliers and to wring costs out of the procurement process. Sellers are

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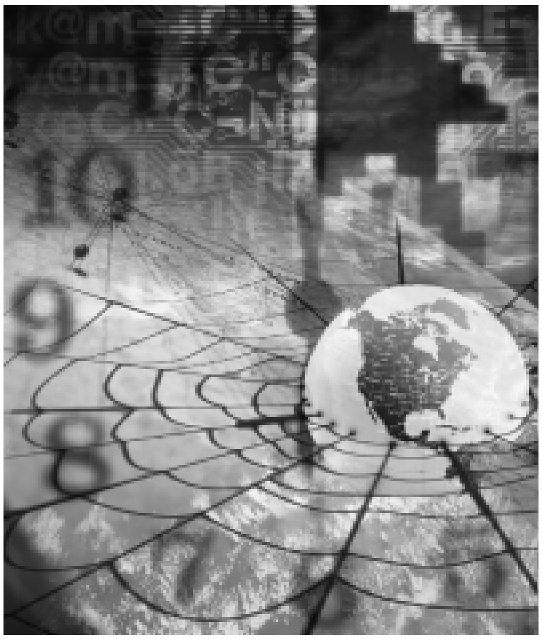
looking for new customers and new ways to sell existing product, but they also recognize that a powerful new channel is emerging and they don't want to be left out of potential deals. The first BtoB marketplaces or exchanges to emerge seemed to emphasize their capacity to generate greater competition among sellers – an arrangement that would potentially lead to relentless price wars and drive down procurement costs.



In some ways, these are positive trends. Too many sellers have relied for too long on low value sources of differentiation or on market friction. Their barriers to entry were factors such as geographical proximity or the customer's ignorance of the alternatives. The Internet, however, tends to eliminate friction. It makes information and choice widely available to buyers, forcing sellers to offer real, customer-driven value in order to remain competitive and profitable.

The trouble with BtoB marketplaces or exchanges that focus exclusively on reduced procurement costs as the key reason for buyer participation is that they undermine the prospects of sellers. They erode the seller's margins and thereby discourage them from participating. More importantly, they fail to recognize the value that sellers can deliver when they are able to actively collaborate with buyers. When sellers and buyers work together, they can create customized products and services that did not previously exist. They can also share information, reduce lead times and practically eliminate needless inventories.

The initial concept of the BtoB exchange tended to ignore the possibilities associated with relationship building. Early on, BtoB exchanges were largely treated as an antagonistic mechanism – one that would pit buyers against sellers and sellers against each other. These are the dynamics of "transactional commerce." Of course, transactional markets will weed out low-value companies and drive industry consolidation. The overlap and integration of different digital marketplaces promises to create powerful new channels for sellers and new sourcing opportunities for buyers. However, there are clear limits to what can be accomplished through auctions and other purely transactional mechanisms.

With that in mind, the new mantra is "collaboration." While it's unlikely that transactional commerce will go away, what one can expect is much more emphasis on enabling companies to collaborate on the Internet so that they can create powerful new forms of value. This means buyers and sellers must be able to interact and negotiate around much more than price. It also means that various sellers should be able to use the Internet to collaboratively create solutions that draw on their complementary skills and expertise. These are the dynamics of "collaborative commerce."

There is no shortage of new models for these emerging digital marketplaces. Some concentrate power with the buyers; some strengthen the hand of sellers. Some are neutral in their approach. Some digital marketplaces even revolve around a single company such as Dell, Cisco or Wal-Mart. The key point is that the Internet is proving a catalyst in the emergence of high-velocity markets. These markets will enable new forms of collaboration, eliminate friction and give all participants greater insight into their options and opportunities.

CHEMATCH.COM: THE FUTURE OF CHEMICAL COMMERCE

How do you turn stockpiles of chemicals into liquid assets? You put them on the Net. That's the lesson learned by CheMatch.com, an Internet exchange for buying and selling bulk commodity chemicals, polymers, and fuel products.

Carl McCutcheon, chairman and CEO, CheMatch.com

Buyers and sellers tap into the network to trade 24 hours a day, seven days a week, on a global basis. Indeed, participants have joined from North America, Europe, and Asia. Every month, they are trading some 90,000 metric tons of commodity chemicals. The average trade exceeds $500,000

Such services are having a dramatic impact on the chemicals industry Historically, the industry was known for market fragmentation, rigid contracts for regular deliveries, price volatility, and other inefficiencies. But with 400 members issuing buy and sell orders, the market is more keenly attuned to forces of supply and demand.

To enable this matchmaking, CheMatch employs multiple trading mechanisms including auctions, reverse auctions, negotiations, and online real-time exchanges. "CheMatch.com provides a solution that creates value for all participants – both buyers and suppliers – by reducing the costs of buying and selling," says Carl McCutcheon, chairman and CEO of CheMatch.

One of the exchange's most important effects on the industry is related to pricing. Price volatility has long troubled chemical commodities buyers who have lacked information about the stocks and inventories of suppliers. Other market inefficiencies can be attributed to slow manual processes that have raised the cost of sales.

However, CheMatch appears to be addressing the needs of both buyers and sellers by offering a host of online trading capabilities and information resources. It now enables suppliers to sell off surplus inventory and buyers to purchase chemicals through "spot auctions" and longer-term contracts. Such options tend to create much greater price stability, as market fragmentation becomes less of a factor.

The exchange, which is powered by software from Ariba, makes it easy for its members to participate in both simple and more complex trading arrangements. For instance, parties to longer-term contracts use the Request for Quotation function on

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CheMatch to negotiate tender offers. These offers are evaluated online, in real time, on a diverse set of factors including delivery costs, quality, and delivery times.

Moreover, CheMatch speeds up the whole process of procurement and supply, reducing costs on many levels "Competitive bidding compresses the time for negotiating contracts and reduces costs throughout the entire commodity chemicals supply chain," says McCutcheon. "In addition, since we have automated trading, we lower sales costs, making the trading process more efficient for everyone."

Interestingly, the Internet is also enabling the entry of many new players into marketplaces that were once relatively defined and closed. "Although we drew our initial set of auction participants from existing members, we have found that auctioning has pulled in new companies and increased our universe of members," says McCutcheon. "We are benefiting from the 'network effect,' where our membership grows because auction initiators pull in their existing suppliers, adding even more companies to the list of bidders in an auction."

As such comments suggest, the Internet has the potential to expand the boundaries of markets while accelerating the velocity of commerce. The Internet exchange – a dynamic trading environment – enables buyers and sellers to engage in new methods of negotiation and interaction. They can trade in real-time, with real intelligence.

Organizing for Perpetual Change

The last great wave of business change, which was known as "reengineering," left a great deal of disappointment in its wake. In the mid 1990's, there was a sense that organizations had been poorly rearranged, that people had been needlessly let go and that large investments in technology and consulting had fallen far short of expectations. It was in 1995 that Fast Company Magazine, in its premiere issue, declared reengineering dead. "The rock that reengineering has foundered on is simple: people. Reengineering treated the people inside companies as if they were just so many bits and bytes, interchangeable parts to be reengineered," wrote Thomas H. Davenport.

Of course, some might disagree with the presumption that reengineering was a failed management imperative. In the wake of the disruptions and dislocations associated with the trend, America experienced some of its fattest years ever It could be that the reorganization that accompanied reengineering forced companies to take a hard look at what they were good at and what they were not, what they should be investing in and what they should not. The benefits may have exceeded the costs. The question is: How can we do better this time around?

It is with this question in mind that companies need to ask themselves how they can actually capitalize on the talents of their people – their human capital – as opposed to just treating them as "interchangeable parts." Companies may have no choice this time. In recent years, we've witnessed the beginnings of a far-reaching "talent war" in which companies scramble to attract and retain good people. Changing demographics suggest the problem is only going to get worse. Consider this statistic: McKinsey and Co. found that a growth rate of 2% over the next 15 years would increase the demand for executives by a third. However, the number of people aged 35 to 44 will decline by 15% between 2000 and 2015.

Under the circumstances, the question of how companies will continue to thrive as they have in recent years is an open one. One thing is clear: They must enable their people to work in far more productive ways. That means they must learn to succeed in an environment in which change is pervasive and perpetual. New technologies will not be enough to transform enterprises and prepare them for the real-time era. It will take skilled, knowledgeable and highly motivated people.

Companies must learn to manage change in entirely new ways. In the past, new investments in technology have not been accompanied by real and far-reaching efforts to change organizational attitudes, behaviors and responsibilities. The potential of people has gone largely untapped–and little effort has been made to lead them in a new direction. In order to thrive in an era of dynamic and continuous change, companies must:

• Develop initiatives that enable the organization to capitalize on real-time principles through new forms of enterprise intelligence and powerful relationships with customers, suppliers and partners.

• Communicate and promote the payoff associated with these changes, encouraging widespread support throughout the organization (and among partners, customers and other parties beyond it).

• Manage and support the organizational changes that must take place in order for the enterprise to adapt to perpetually changing customer needs and market realities.

Of course, this is a gross simplification of the challenges that companies face and must overcome. Most successful companies in this new era will be ones who manage perpetual change on many levels. They must make smart investments not only in technology, but in people and partnerships, as well as in expansive new capabilities.

But they will also need help. Deep change management expertise is largely absent and so are the means of transferring it to the companies implementing real-time initiatives. For assistance in developing these efforts, it is natural to look to consulting companies. Many firms promise strategic advice and

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tactical implementation. Their offerings, however, are not enough at this point. The consulting industry, which has largely geared itself to large-scale systems implementation, is currently experiencing an identity crisis. As large-scale information technology (IT) projects dwindle and competition increases, the demand for armies of IT implementers has dropped.

One can expect to see much wider investments in real business transformation and change management efforts in the coming years. The consulting industry will have to redirect a great deal of its resources and figure out new business models that make this an attractive proposition. They must hire and retrain to create a work force geared to the very personal, political and highly charged hurdles associated with change.

Companies, however, cannot capitalize on the opportunities of the real-time era if they are not prepared to embrace perpetual change and intelligently manage it. Nor will change occur by happenstance. There is clearly a management discipline emerging with regard to change management–and companies must be quick to understand and adopt its successful practices.

Some of the greatest challenges that companies face revolve around creating corporate cultures that welcome collaboration across departments and even enterprises. The boundaries that have traditionally separated departments and divisions, companies and their suppliers, are now proving to be a hindrance. Under the circumstances, companies must learn to change their way of thinking and acting so that they can make the most of an era in which collaboration and relationship building is critical to success.

We think some of the key elements of the transformation process include building a foundation for change, crafting and articulating a strategy, and executing that strategy. Companies must develop bold and clear initiatives that can be embraced by employees as well as by other parties in the value-creation network. Then, they must reinforce their change efforts. Enterprise change initiatives will eventually fail if they are not constantly supported and strengthened. Finally, companies must be prepared to begin anew–to stay ahead of changes and realignments in their industries. If they want to succeed in the years to come, companies must consider these steps and then take them with confidence.

GENERAL MILLS: THE POWER OF COLLABORATION

The new buzzword in high-tech business circles is “collaborative commerce”. Executives are beginning to realize that one of the most important benefits associated with new technology – and especially with the Internet – is enabling companies to work together to cut costs and generate new value.

Kevin Schoen, director of strategic alliance, General Mills

One company that shares this vision is General Mills, home of the Betty Crocker brand. It uses a Web-based logistics service, provided by a company called Nistevo, to manage contracts, exchange shipping data, and address complex logistical challenges. When products ship, General Mills and 11 other companies share transportation data to achieve greater efficiency.

“The concept of collaboration is extremely powerful,” says Kevin Schoen, General Mills’ director of strategic alliances. “General Mills pursued the strategy because we had 10 years of declining supply chain costs and we needed to find a way to continue that trend.”

One of the partners, Pillsbury Company, will become part of General Mills by the end of 2000. The other 10 partners represent food products and packaging companies: ConAgra, Fort James Corporation, Graphic Packaging, Hormel Foods, International Multifoods, Ivex Packaging, Land O’Lakes, McCormick (Spices) Company, Nabisco, and Nestle USA.

The 12 partners swap real-time data on the shipment of goods via the Internet. Participating manufacturers and freight carriers use the online exchange to match product shipments and destinations with available trucks. In addition, Nistevo’s technology enables realtime tracking of shipments. From the time an order is placed, any shipment can be pinpointed until it reaches its destination.

The benefits are significant; some savings amount to as much as $800,000 on a single route. The truck industry averages 12 to 18 percent in empty back-haul miles, but with this logistics exchange, says Schoen, “we’ve dropped that down to five percent.”

Logistics management is a win-win proposition for carriers as well as for shippers. Across the industry, the turnover rate for drivers is 103% a year. Drivers cite long hours, uncertainty about assignments, and uneven spot demand. They hate constant calls to shippers to ask if the load is ready. The drivers’ bosses – the carrier companies – like to keep the wheels rolling, too. They want predictable routes, maximized capacity and back-haul usage. “Carriers like forward visibility to plan the movement of the assets,” Schoen says.

The logistics exchange addresses these challenges and demands by giving carriers access to a wider number of companies, says Rick Parker, Nistevo’s vice president of marketing “The technology matches up partners. Carriers can increase their revenue and keep their trucks full. And for both the shipper and the carrier, the Web-based service has key performance metrics like the number of contracts filled, on-time delivery rates, and damages. All the numbers are in one place.”

There are savings in fuel costs, too. Between the 12 alliance partners, two to three billion miles is traversed every year. “if 12 percent of the trucks are empty, that’s 40 million miles of empty trucks on the roads. How much fuel is that?” Schoen asks, rhetorically. “What about the infrastructure? The roads, the bridges, you need to build? What about the effect on traffic gridlock? The [more you reduce fuel usage and unproductive trucking miles], the better off you’ll be.”

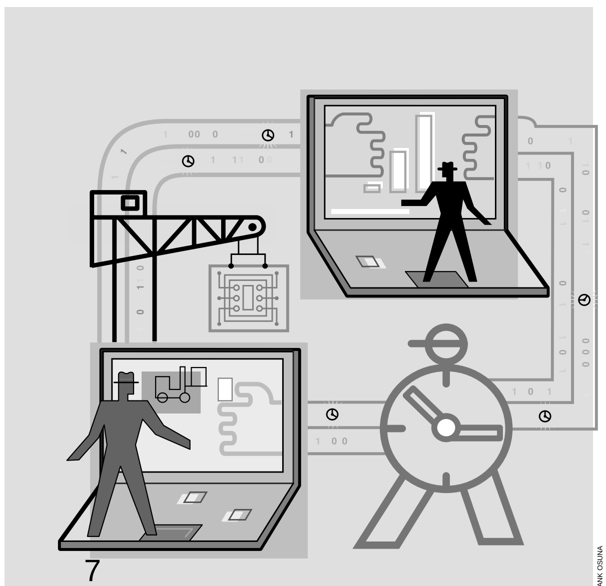
Apart from reduced costs, logistics services also shrink cycle times. The supply chain is more efficient and effective because the shipping data is made available in real-time. Moreover, logistics management software streamlines contracting, invoicing and other transactions.

No contest. Automation trumps manual processes. Internet-based logistics services enable new forms of collaborative commerce. With lower costs, performance metrics, improved supply chain management, and higher retention of truck drivers, everyone wins.

Relationship Strategy and the Extended Enterprise

Forward-looking executives face a new set of challenges in the real-time economy. It's no longer enough to make innovative, high quality products. Nor is it enough to merely build strong customer relationships. The real-time enterprise must develop strong relationships with all of the participants in its network of value creation. It must build close connections with customers, but also with suppliers and partners. It must have insight and visibility into its networks of supply and demand, and it must be able to act rapidly and with precision.

In the coming year, world-class companies will play the role of matchmaker – learning and anticipating the customer's needs and then dispatching capabilities to address them. They must match their own resources and those of the business partners to the preferences and priorities of their customers. But this synchronization of supply and demand will not happen unless companies build powerful relationships.



In order to build such relationships, they must demonstrate trust by sharing information with the many participants in their extended enterprise. They will provide wide-ranging information access to their customers and suppliers in an effort to optimize the entire network. Such relationships have often been antagonistic and secretive in the past, as buyers and sellers struggled to win the best possible terms. Why, for instance, would a buyer share information with a seller about prospective demand when the seller could use this information to extract more favorable terms? The answer is that both parties have much to gain through information sharing. Through collaboration, companies and customers – sellers and buyers – have the ability to eliminate costly inventories, speed up deliveries, and jointly create valuable products, services and solutions.

There are many opportunities for companies to collaborate with their suppliers and partners in order to optimize the system as a whole. In addition to sharing information that addresses immediate inventory and distribution challenges, they can move upstream and focus on collaborative planning and forecasting. This allows companies to generate a better sense of what customers are likely to buy in the future and how these expected demands might be met. Indeed, companies can even collaborate with their suppliers to design and develop new products. They can share design plans and databases to create products of higher quality and sophistication than would be possible if they were acting alone.

Change is moving too fast and customer needs are too complex for organizations to try to do things on their own. They need to create dynamic networks of partners, suppliers and other parties in order to realize their potential for growth and success. The premium on such relationships is higher than it has ever been.

Technological trends are certainly hastening and facilitating this move toward collaboration and relationship building. The explosion of networking, communications and computing technologies makes it easier than ever for companies to transcend organizational and geographical boundaries. They can effectively overcome many of the transaction and coordination costs that have encouraged centralized management and vertical integration in the past. This allows companies to focus on their "core competencies" – what they do best – and outsource, partner and contract out activities in which they do not excel. Such trends promise to encourage greater efficiency and innovation. They point to an explosion of powerful new partnerships and alliances–and a new era of networked relationships.

Companies like Cisco Systems, Dell Computer, Lands' End, Borden Foods, and Procter & Gamble offer tremendous examples of what can be achieved when customer, supplier and partner relationships are effectively managed in parallel. Such companies certainly have developed powerful customer relationships. But they recognize that those aren't the only relationships that matter.

Michael Dell uses the term "virtual integration" to describe this vigorous network of relationships. Dell's approach, which relies on the real-time movement of information, combines the agility of a focused, entrepreneurial firm with the coordination of a traditional, vertically integrated one. Dell Computer strengthens its connections with its customers and suppliers by sharing information–and deepening relationships in the process. It depends on customers – particularly large enterprise clients – to share their complex technology needs and expectations. It depends on suppliers – whether for monitors, motherboards or flat panel displays – to become an integral part of its own production processes. Such relationships reduce inventory, cut costs and enable Dell to rapidly respond to customer needs with customized solutions.

That is as it should be. We believe companies will increasingly focus on expansive relationships that blur organizational boundaries. They will explore new ways of linking their customers, suppliers and partners into one dynamic network. This is the future we are all moving toward.

HONEYWELL: DIRECT CONNECTIONS ON THE NET

Companies need to effectively manage their customers and capabilities in parallel – something the real-time enterprise knows very well. However, the boundaries separating company and customer are beginning to dissolve. That means companies must increasingly provide their customers with direct access to their capabilities–their products, services and solutions. As opposed to relying on sales professionals and account executives for every need, customers are now gaining the ability to order complex and customized products on their own and in real time. The only constraint is a given company's ability to fulfill demand.

Honeywell, a leading provider of control technologies for industrial use, is one company that gives its customers a direct connection to its host of capabilities. The company provides an information management system for manufacturing plants, known as PlantScape. It's a sophisticated automation system that manages various types of industrial operations–from mixing chemicals to producing soda pop–while ensuring quality and safety. More than 3,000 PlantScape control systems have been installed for applications ranging from oil and gas to food and beverage to metals and mining.

The control systems, however, require complex configurations. In the past, Honeywell engineers were required to create a configuration manually and generate a customized quote–a process that took time and demanded that both the customer and the company engineer be together on the phone.

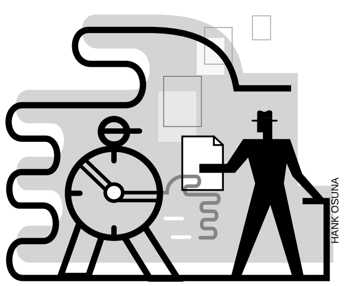
Now, all parties have the ability to act in real-time on the Internet. Honeywell has rolled out a Web-based, electronic order processing system that enables the customer to request information and complete transactions around the clock. This allows both customers and Honeywell system resellers to gain access to the solutions they need without having to go through the time-consuming process of manually matching needs and capabilities.

Results? Faster turnaround: What once took 48 hours can now be accomplished immediately. Greater accuracy: No information is lost over the phone or in translation between paper and electronic systems. And higher customer satisfaction: The customer is now given control over the process and can ensure that an order is precisely matched to specifications. All indicators suggest the system is a success. Honeywell has recorded an average of 7,000 monthly online sessions in recent months.

The PlantScape configuration engine, which was developed by Calico Commerce, enables the customer to order highly complex solutions and receive immediate quotes in an automated fashion. It streamlines order processing and gives the customer the information needed to make effective decisions. It also enables sales people and account managers to focus on high value activities that win customer loyalty.

"We are freeing the feet on the street," says Bob Lahey, director of E-Business marketing for Honeywell's Industrial Automation and Control business. "Our people are now adding value by helping customers, as opposed to engaging in the mundane activity of manually placing and tracking orders."

In the coming years, Honeywell intends to expand the real-time ordering capabilities it now offers to other Honeywell product lines. It also plans to allow customers to directly reach back into the company's supply chain. Honeywell's partners and suppliers would then have immediate knowledge of customer demand and could act with greater speed. That would eliminate several more steps, accelerate the movement of products and further strengthen Honeywell's customer relationships.



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