



# OPTIMIZING YOUR BUSINESS RELATIONSHIPS

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How to get the most out of your vendors, customers and employees

# The Superefficient Company

by Michael Hammer



Harvard Business Review

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*You've cut the waste  
out of your own operations.  
Now, you face an even tougher  
challenge: streamlining  
the processes you share  
with other companies.*

# THE Superefficient COMPANY

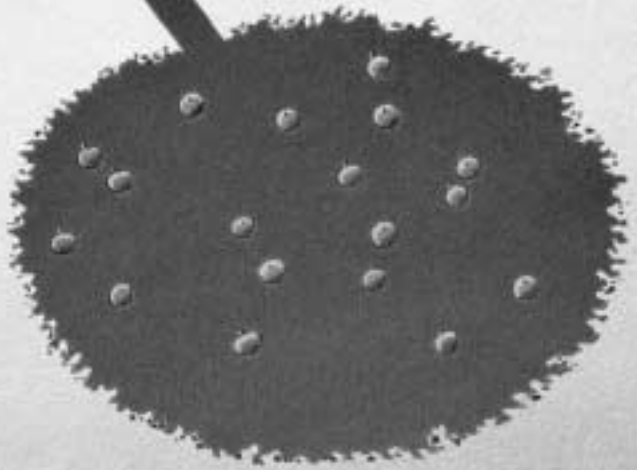
by Michael Hammer

**H**AVING FOUGHT YOUR WAY THROUGH the productivity wars of the past ten years, you're probably proud of the leanness of your operations. And rightly so. You've revamped your processes, reducing overhead and cutting out redundant activities. You've enhanced the quality of your products and services, ridding your organization of mistakes and miscommunication. And you've broken down the walls between your units, getting people to work together and share information. In short, you've created a truly efficient company.

Guess what? You've only just begun.

While it's true that companies have done a great job streamlining their internal processes, it's equally true that their shared processes—those that involve interactions with other companies—are largely a mess. Think about your procurement process. It's the mirror image of your supplier's order-fulfillment process, with many of the same tasks and information requirements. When your purchasing agent fills out a requisition form, for instance, she is

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performing essentially the same work that the supplier's order-entry clerk performs when he takes the order. Yet there's probably little or no coordination between the two processes. Even if you and your supplier exchange transaction data electronically, the actual work is still performed in isolation, separated by a very deep intercompany divide.

Because cross-company processes are not coordinated, a vast number of activities end up being duplicated. The same information is entered repeatedly into different systems, the same forms are filled out and passed around multiple times, the same checks and certifications are done over and over. When activities and data make the jump between companies, inconsistencies, errors, and misunderstandings routinely arise, leading to even more wasted work. And scores of employees typically have to be assigned to manage the cumbersome interactions between companies. Though all these inefficiencies may be hidden from your accounting systems, which track only what happens within your own walls, the costs are real, and they are large. Today, efficiency ends at the edges of a company.

Streamlining cross-company processes is the next great frontier for reducing costs, enhancing quality, and speeding operations. It's where this decade's productivity wars will be fought. The victors will be those companies that are able to take a new approach to business, working closely with partners to design and manage processes that extend across traditional corporate boundaries. They will be the ones that make the leap from efficiency to superefficiency.

## Tearing Down Walls

To get a clearer view of the prodigious costs of uncoordinated intercompany processes—and the great rewards of integrating them—look at the recent experiences of Geon, a chemical company based in Ohio. Geon spun off from BFGoodrich in 1993. Through organic growth and a series of acquisitions and joint ventures, it established itself as the world's largest producer of polyvinyl compound (PVC), garnering revenues of \$1.3 billion in 1999. (Last year, Geon merged with another chemical company, M.A. Hanna, to form PolyOne.)

Through most of the 1990s, Geon was a vertically integrated business. It bought chlorine and ethylene and combined them to create the basic raw material for PVC, vinyl chloride monomer (VCM). It then transformed VCM into resins and, through a series of additional steps, into various compounds used in products ranging from computer housings to home appliances. Like many industrial com-

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panies, Geon focused its energies in the mid-1990s on breaking down the walls between its units in order to reduce costs and create greater value for customers. The company followed a program that is by now familiar: integrating and simplifying core business processes and installing an ERP system to support them. By allowing information and transactions to flow more easily among different parts of the company, Geon profited handsomely. The percentage of orders shipped on time soared, customer complaints almost vanished, the need to pay premium freight rates to make up for scheduling foul-ups evaporated, inventory levels fell sharply, and overall productivity got a strong boost. Geon's costs dropped by tens of millions of dollars, and its working capital fell from more than 16% of sales to less than 14%.

Then, in 1999, the company initiated a major strategic shift: Recognizing that it did not have the sales volumes necessary to produce VCM and resins at a competitive cost, the company decided to focus entirely on the compounding side of the business. Producing compounds was a higher-value-adding activity, and it was less dependent on scale and more reliant on clever engineering to meet specific customer needs. This new focus would give Geon the opportunity to gain a true competitive advantage and to widen its margins. In support of the new strategy, Geon divested its VCM and resins operations to a joint venture with Occidental Chemical called OxyVinyls, which became its primary supplier of materials.

While Geon's actions were strategically sound, they were operationally disastrous. In effect, Geon erected a high (intercompany) wall where it had just demolished a low (intracompany) one. VCM and resin production had only recently been integrated with compounding, and now they were again torn asunder, this time becoming parts of separate companies. The results were all too predictable: Work was no longer coordinated, information was no longer shared, and overhead and duplication were reintroduced. Expeditors, schedulers, and a host of clerical personnel had to be hired to manage the interface between Geon and OxyVinyls. Data had to be entered twice, resulting in an 8% error rate on orders that Geon placed with OxyVinyls—wrong purchase-order numbers, product numbers, prices, and so on. The time needed to process orders also jumped as communications became more formal and interfaces more complex.

On the production side, as Geon and OxyVinyls became less aware of each other's inventories, shipments, and levels of demand, their manufacturing processes became more irregular, requiring many stops and starts, delays, and unexpected changeovers. Geon's horizon for production planning was dramatically foreshortened, from about seven weeks to about three. Its inventories increased 15%, its working capital went up 12%, and its order-fulfillment cycle time tripled. Not only had Geon lost the earlier benefits it had gained by painstakingly integrating

its business processes, but in many ways the situation became even worse than it had been before Geon's internal wall-bashing.

Geon's problems may appear particularly dire, but they were actually no worse than those faced by most companies. There was, however, one crucial difference: Geon saw them. Its rapidly decaying performance underscored to management the huge penalties of disjointed inter-company processes. Rather than ignoring the inefficiency or dismissing it as the inevitable consequence of working with other companies, Geon took action. It worked closely with OxyVinyls to connect both companies' processes and the computer systems that supported them.

The two companies tightly integrated their forecasting process; now, as soon as Geon uses information from its customers to predict demand for compounds, that forecast is transmitted, over the Internet, to OxyVinyls, which

production and shipping schedules, they are held accountable for the availability as well as the price of the materials they buy.

Geon has recently gone a step further, integrating its processes with those of its customers. It has put sensors into some of its major buyers' warehouses so that it always knows how much of its compounds a customer has in stock. When inventories decline to an agreed-upon level, Geon automatically sends replenishments, cutting out many traditional stock-checking and ordering activities.

Through Geon's efforts, the processes of three different companies—the customer's procurement processes, Geon's order-fulfillment and procurement processes, and OxyVinyls' order-fulfillment process—have been integrated. They are now all managed as a single process, without regard to corporate boundaries and with much less friction, overhead, and error. The payoffs have been dramatic.

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## Companies are starting to see business processes – and manage them – as they truly are: chains of activities that are performed by different organizations.

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incorporates it into its own forecast for resins and monomers. Ordering and fulfillment processes are also tightly knit. Within 24 hours of receiving an order from one of its customers, Geon translates the order into the materials it will need from OxyVinyls and automatically dispatches an order directly into OxyVinyls' fulfillment process and system. In turn, order acknowledgments and confirmations, advance shipment notifications, and invoices automatically go from OxyVinyls back to Geon.

The jobs and behavior of employees involved in the processes have changed significantly as a result. Production planners in one company, for example, no longer have to waste time trying to find out what's going on in another company. Instead, they can concentrate on solving problems in ways that benefit both companies. When there are tight markets for raw materials, for instance, planners from Geon and OxyVinyls work hand-in-hand to reschedule production runs and shipments to ensure that plant capacity is used as efficiently as possible. Geon's people also better appreciate that small orders increase OxyVinyls' shipping costs, and they now look for opportunities to consolidate purchases. They know that when OxyVinyls' costs go down, so do the prices of the products it sells to Geon.

Performance measures have also changed. Geon's purchasing agents used to be evaluated primarily on the prices they negotiated for materials. Even though the availability of materials is critical to manufacturing productivity, that factor was not taken into account in assessing the agents because it was assumed they had little knowledge of or control over the supplier's shipments. Now that the agents have accurate information about OxyVinyls'

Geon's 8% error rate in placing orders has gone to 0%, its order-fulfillment cycle time has fallen back to its earlier level, and its inventories have declined 15%. Its labor costs have also fallen, because non-value-adding work has been eliminated. More important, the company has been able to reassign many of its people to jobs in which they serve customers rather than just fix mistakes. That's enabled Geon to better fulfill its new strategy of focusing on high-value-added activities.

### Relocating Work

It may be tempting to look at Geon's story simply as an illustration of the power of using the Internet to connect disparate information systems. But while that's an accurate technological description, it misses the bigger point: Separate processes in separate companies have been connected and combined and now work as one. New technologies may be the glue, but the more important innovation is the change in the way people think and work. Rather than seeing business processes as ending at the edges of their companies, Geon and its partners now see them – and manage them – as they truly are: chains of activities that are performed by different organizations.

Although the concept of supply chain integration has been around for some time now, companies have had trouble making it a reality. In most cases, that's because they've viewed it as merely a technological challenge rather than as what it really is: a process and management challenge. Once you adopt this broader view, you can quickly cut a lot of costs and waste from your existing operations. But you can do much more as well—you can

discover new and better ways to work. You can begin to shift activities across corporate boundaries. If your company, for instance, happens to be in a better position today to do some work that my company has traditionally done, then you should do it—even if that work is “officially” my responsibility. The increased costs you incur doing the work will be more than offset by the benefits of improving the process as a whole, benefits that will accrue to both of us...

## Simplifying Supply Chains

Another high-tech company, Hewlett-Packard, has taken an even more aggressive approach to restructuring work in cross-company processes—in a way that is reshaping the economics of its supply chain for computer monitors. A typical purchaser of an HP monitor probably has no idea how many companies are involved in producing it. Like most computer makers, HP has outsourced much of its manufacturing to contract producers, such as Solec-tron and Celestica. The contract manufacturer buys the case for the monitor from an injection molder, which acquires the material used to make the case from a plastics

routinely altered.

The disparity in scale between the participants in this supply chain complicated matters further. HP and its resin supplier are giant companies, and the contract manufacturers are fairly substantial as well. But most injection molders are relatively small outfits, as are most compounders. So every HP order for monitor cases was usually split among many compounders, each of which bought resin in relatively small volumes—and, consequently, at relatively high prices—from the resin maker. HP’s potential purchasing clout, in other words, dissipated at each step in the chain that separated it from its ultimate supplier. Because it was shielded from the suppliers of compounds and resins, HP also lacked the ability to track their quality and delivery performance and their prices and terms, and it rarely heard their ideas for enhancing products and processes.

An army of people, dispersed among the different companies and using a host of unrelated information systems, was required to hold this cumbersome set of processes together—at great cost. Recognizing the problem, HP in 1999 resolved to integrate the entire supply chain and coordinate the unified process. The company assumed re-

## When processes are linked, any change to an order ripples through the entire supply chain.

compounder (Geon is an example), which in turn buys the material for the compound from a resin maker. This supply chain is fairly easy to describe, but, until recently, it was almost impossible to manage.

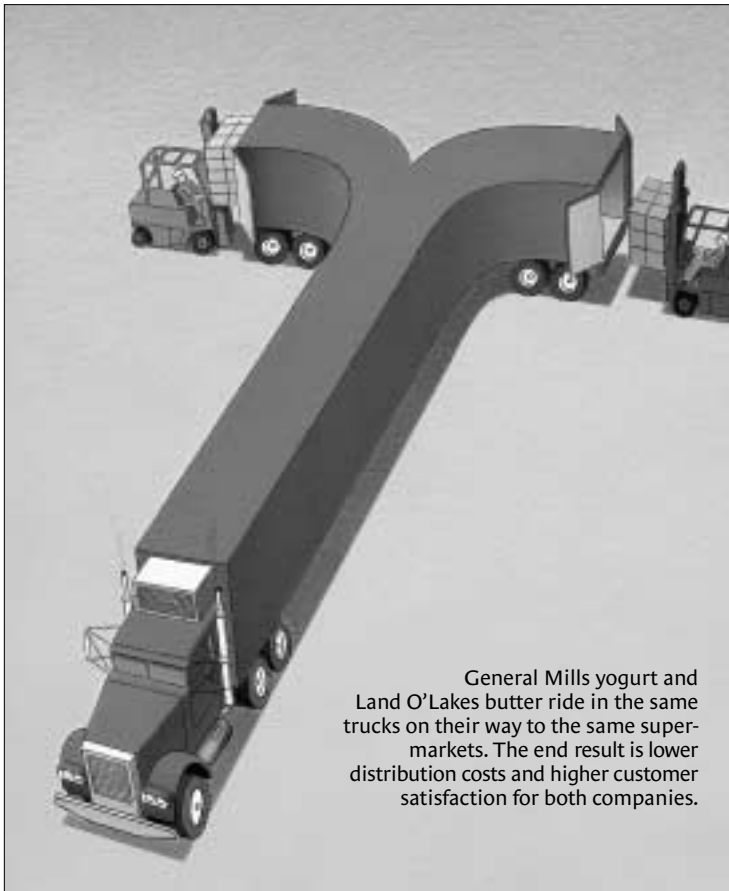
For one thing, the suppliers at the opposite end of the chain from HP had no idea how many monitors HP would actually need; they often didn’t even know that HP was the ultimate destination for their resin or compound. Consequently, each had to carry a lot of inventory in case an HP order came barreling down the chain. In many cases, the inventory that they did carry ended up not being what HP needed at the moment. When that happened, HP was sometimes unable to deliver an order when the customer needed it, forcing the customer to go elsewhere. Disputes between upstream suppliers could also lead to unexpected delivery delays that might disrupt HP’s ability to fulfill orders. Such situations meant lost revenue for everyone in the supply chain.

Another complexity was the volatility in order specifications. In theory, once HP placed an order, its suppliers should have been ready to roll. But the reality of the computer business is that nothing stays fixed for long. On average, an order for a batch of computer monitors changes four times before it is completely filled, usually in response to shifts in marketplace demand. Quantity, delivery date, and color are just a few of the variables that are

responsibility for ensuring that all parties work together, share information, and operate in a way that guarantees the lowest costs and the highest levels of availability throughout the chain.

The hub of the newly integrated process is a computer system that HP set up to share information among all the participants. HP posts its demand forecasts and revisions for its partners to use in their own forecasting. The partners post their plans and schedules and use the system to communicate with their own suppliers and customers, exchanging electronic orders, acknowledgments, and invoices. HP’s procurement staff manages the entire process, monitoring the performance of the upstream suppliers, helping to resolve disputes relating to payments, and keeping supply and demand in balance. The company’s purchasing agents, once narrowly focused on terms and conditions, have seen their jobs broaden considerably.

The integrated process has dramatically enhanced the performance of the supply chain. Today, any kind of change to an HP order ripples through the chain instantaneously, allowing everyone to react quickly. And if any problem crops up that threatens HP’s ability to meet its forecasts, HP learns of it early enough to make other plans. Because it coordinates the entire process, HP can also order all its required resin directly from the resin sup-



General Mills yogurt and Land O'Lakes butter ride in the same trucks on their way to the same supermarkets. The end result is lower distribution costs and higher customer satisfaction for both companies.

plier. It provides the resin maker with an aggregate order, and it receives a single bill at a uniform, considerably lower contract price. The resin maker benefits from this new relationship as well; it gets the simplicity and security of dealing with one large customer rather than a host of small ones.

Streamlining the supply process has helped every participant, but HP has perhaps profited most. In the first implementation of this process, the price HP pays for its resins has gone down as much as 5%, the number of people it requires to manage the supply chain has been cut in half, and the time it takes to fill an order for a computer monitor has dropped 25%. Best of all, HP estimates that it is increasing sales in the areas in which it has implemented this newly integrated process by 2%. These are sales that the company had previously lost because it could not deliver the right product at the right time. HP no longer has to commit the mortal sin of turning customers away.

## From Coordination to Collaboration

The examples I've described so far center on the management of supply chains. That shouldn't be a surprise. Supply chain problems are highly disruptive—and costly—to companies, and fixing them delivers a big, immediate

payoff. So companies have tended to focus their initial efforts in streamlining cross-company processes on the supply chain. But tantalizing opportunities in other areas are now starting to appear. The next major wave is likely to be the integration of product-development processes. A company, its suppliers, and even its customers will begin to share information and activities to speed the design of a product and raise the odds of its success in the market. Suppliers, for example, will be able to begin developing components before an overall product design is complete, and they will also be able to provide early feedback as to whether components can be produced within specified cost and time constraints. Customers, for their part, will be able to review the product as it evolves and provide input on how it meets their needs. In a very real sense, this kind of collaborative product development will be the multicompany analogue of concurrent engineering, which has transformed internal product development over the past 15 years.

On a more profound level, we're beginning to see examples of an entirely new kind of process collaboration, which promises to change the way we think and even talk about business. The traditional vocabulary of corporate relationships is meager: If you sell me something, I am your customer, and you are my supplier; if another company tries to sell me the same thing, it is your competitor. And that's about it, because those were the only relationships that made any difference to us. But what if you and I are both buying the same product or service from the same supplier? In the past, it was unlikely that either of us would discover that we had such a relationship, and, even if we did, the information would have been of little, if any, value. Consequently, we had no term to describe it. Similarly, what if you and I sell different products, but to the same customer? We are not competitors, but what are we? In the past, we didn't care. Now, we should.

Consider the recent experience of General Mills, a giant in the business of consumer packaged goods, with brands ranging from Cheerios to Yoplait. For years, margins have been falling for consumer packaged goods as distribution channels have consolidated and consumers have become more selective. Through the 1990s, General Mills led the industry in squeezing costs out of its supply chain. Through increased purchasing effectiveness, manufacturing productivity, and distribution efficiencies, General Mills' cost per case of product declined by a remarkable 10% during the decade. But as a new decade dawned, the company's leaders realized they would have to move beyond the confines of their linear supply chain in order to find new cost-savings opportunities. Among their first ideas was a radical new approach to the distribution of

their refrigerated products, like yogurt.

As businesses, refrigerated goods and dry goods have very different characteristics. The top seven dry-goods manufacturers together account for nearly 40% of total supermarket sales in that category. Each of the manufacturers has enough sales to efficiently operate its own distribution network, including warehouses and trucks. In the refrigerated category, however, the top seven players represent less than 15% of total supermarket sales, and nearly all lack the scale needed for a highly efficient, dedicated distribution network. Nonetheless, each company maintains one, and, unsurprisingly, each suffers from sub-optimal productivity as a result.

When a refrigerated truck laden with Yoplait, for example, leaves a General Mills warehouse headed for local supermarkets, it is often carrying less than a full load. Even more often, it is carrying orders for several supermarkets, requiring it to make many stops. If the truck is delayed in traffic or encounters a snafu at one of its early stops, it may not make it to the final supermarket on its route that day. If that supermarket has just run an ad promoting a special on Yoplait, it will have to deal with angry consumers, and General Mills will face a frustrated supermarket in addition to lost sales.

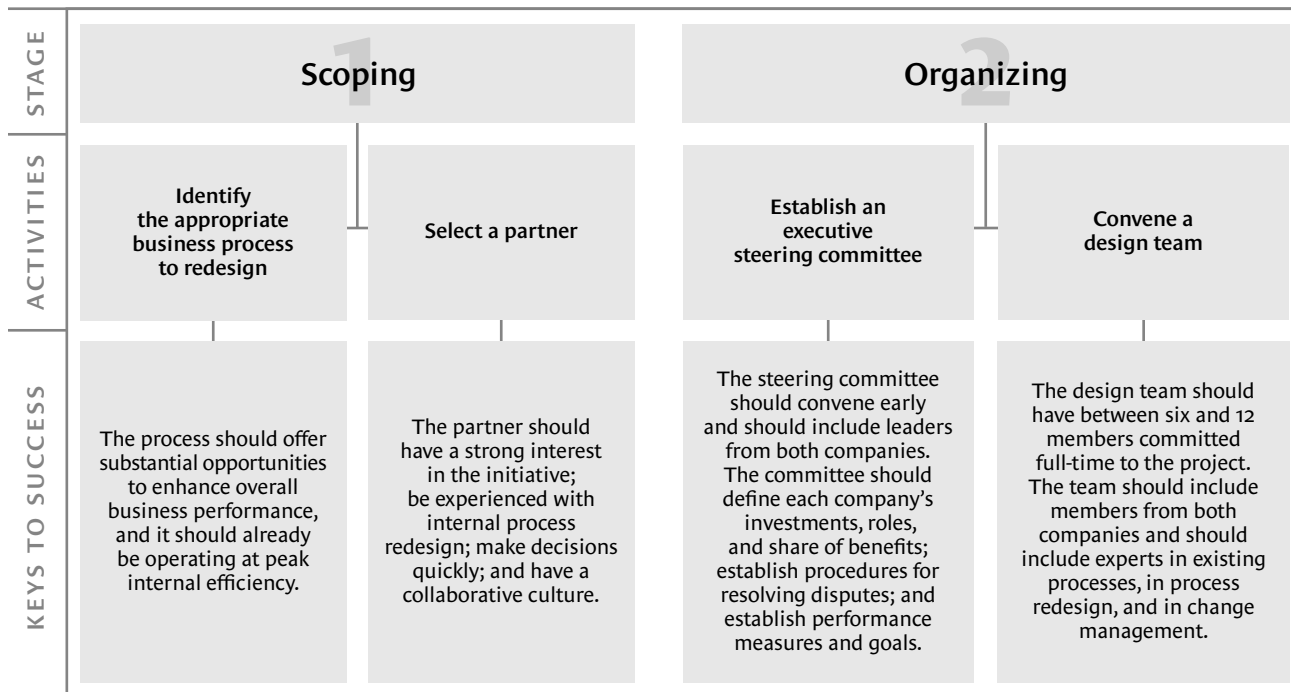
General Mills realized that it could address the problem by integrating its distribution process with another company's. It found the perfect partner in Land O'Lakes, a large producer of butter and margarine. Land O'Lakes products do not compete with those of General Mills, but

they have the same warehousing and transport requirements and the same customers. The two companies agreed to combine their distribution networks, giving them the scale necessary for high efficiency. Today, General Mills yogurt and Land O'Lakes butter ride in the same trucks on their way to the same supermarkets. When Land O'Lakes receives an order, it ships the goods to a General Mills facility, where they are immediately loaded onto a truck containing General Mills yogurt headed for the same customer. Or, if the customer chooses to pick up the goods itself, the orders are stored together in a special section of a General Mills warehouse.

With the combined process, General Mills' trucks go out much fuller than before, and since they're delivering more products to each supermarket, they make fewer stops and suffer fewer delays. The arrangement has been so successful, in terms of both lower costs and higher customer satisfaction, that the two manufacturers are now planning to integrate their order-taking and billing processes as well. They are also working together to create incentives for customers to order larger combined amounts from the two companies, which will result in even greater transport savings.

General Mills and Land O'Lakes are noncompetitive suppliers – what I've come to call *cosuppliers* – to the same customers, and it is to their mutual advantage to find ways to work together. The potential for such relationships has always existed, but in the past it was difficult, if not impossible, to make them work. There was simply no

## Four Steps to Superefficiency



efficient means of sharing information quickly and accurately enough. Manually coordinating two companies' deliveries through a shared distribution network would quickly have turned into a logistical nightmare. But with the Internet and associated communications technologies, these kinds of business relationships suddenly become feasible, opening up new opportunities for creative companies.

Indeed, anywhere that different companies use similar resources, there are opportunities for reducing costs through sharing. For instance, a recent study by a group of manufacturers showed that they collectively owned about 30 million square feet of warehouse facilities in the greater Chicago area, but only 82% of the space was being used. By sharing warehouse space with one another, these companies envision eliminating the waste and sharing the benefits. The U.S. trucking fleet is plagued by similar inefficiencies. Because shippers plan their deliveries independently, they often have to pay for drivers to move empty trucks from the end point of one trip to the start of the next one. At any given time, 20% of the nation's trucks are traveling empty, raising costs for both shippers and truckers. Some companies, however, are now starting to merge their logistics processes. By planning shipments and contracting for trucks together, they're saving money for themselves and their carriers.

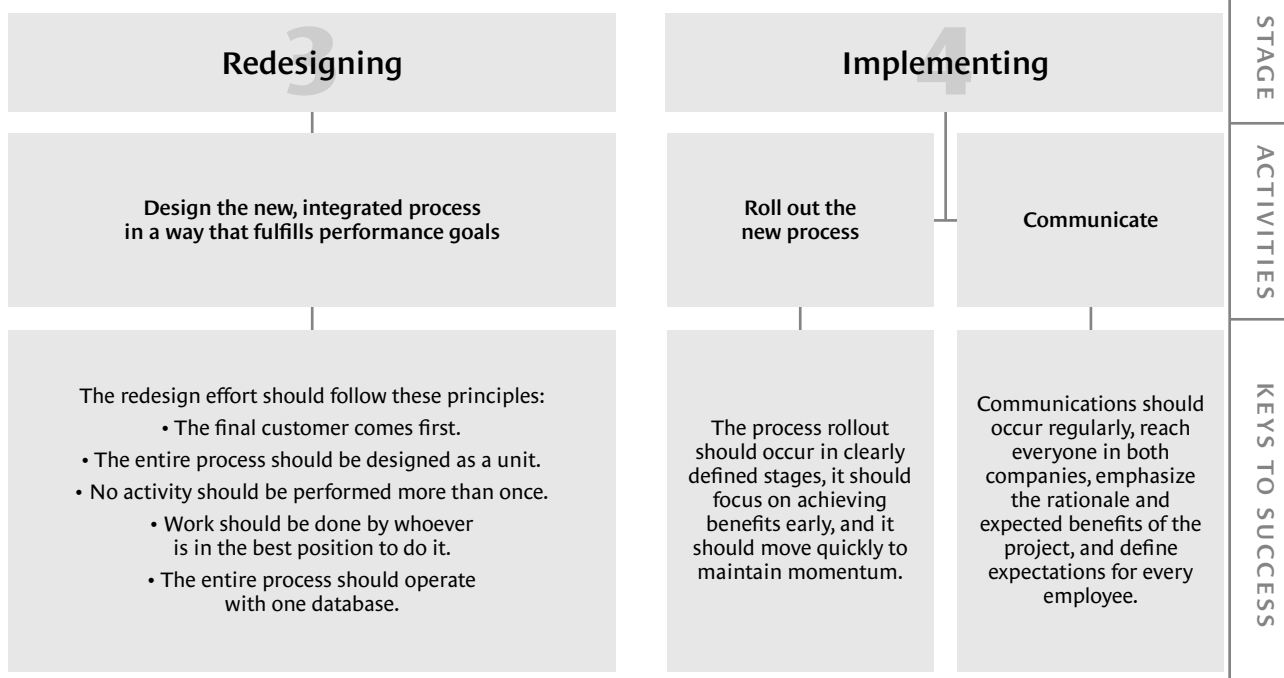
## Making It Happen

Companies that have redesigned their internal processes know that success requires a rigorous, structured approach. The same is true for streamlining cross-company processes, but here the challenges are even greater. No matter how tough it is to get different departments to work together, getting different companies to collaborate is even harder. I have found that it's best to structure the project into four major stages: scoping, organizing, re-designing, and implementing.

**Scoping.** First, you have to set your sights on the right targets. Start by identifying the intercompany process that offers the greatest opportunity for improving your overall business performance, whether it's a supply chain, product development, distribution, or other process. Typically, you'll want to select a process that you've already brought to peak internal efficiency; it makes little sense to merge processes that still harbor inefficiencies.

The choice of the partner you'll work with may be the most important decision you'll make. Obviously, the partner needs to be a company that is likely to have an interest in working with you to streamline the process, but that is not nearly enough. You need to evaluate the other company's technical competence and cultural fit for doing intercompany process redesign. Does it have significant experience with transforming its internal processes? It should, since a cross-company process is a risky place to learn the basics. Can the company make decisions quickly?

Streamlining cross-company business processes is the next great frontier for reducing costs, enhancing quality, and speeding operations. But the leap to superefficiency requires a rigorous, structured approach such as the one described here.



If not, the effort will never yield fruit. Does it have a collaborative style? A focus on the short term rather than the long term, a predilection for contracts rather than trust, a search for one-sided advantage rather than mutual benefit – any of these will doom the initiative.

**Organizing.** The operating and cultural consequences of intercompany process redesign are so far-reaching that strong executive leadership is needed from the outset. An executive steering committee, comprising leaders from both companies, should be convened very early. One of its first responsibilities should be to define the rules of en-

nating duplicated activities is one of the best ways to make intercompany process redesign pay off quickly – and that’s crucial to building and maintaining momentum.

- *Work should be done by whoever is in the best position to do it...* It defeats the purpose of a collaborative to attempt to be self-sufficient. Do what you do best, and let others do the same.
- *The entire process should operate with one database.* When everyone shares the same version of all the information, reconciliation tasks can be eliminated and assets can be deployed precisely and efficiently.

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agement. What will each party invest in this effort? How will benefits be shared? How will conflicts and disputes be resolved? Collaboration on processes is fairly unfamiliar territory for most organizations, and setting ground rules at the start will avoid a lot of misunderstanding later. The steering committee also needs to decide which performance measures (such as cycle times, transaction costs, or inventory levels) will be targeted for improvement and to establish specific, quantified goals.

While the steering committee sponsors the process redesign, it does not actually do it. That is the role of the design team. The design team should include people from both companies, and its core members should be experts in the existing process, people skilled in process redesign, and specialists in technology and change management. Too large a team is unwieldy, and too small a group lacks the critical mass to get anything done; typically, six to 12 people is the right size. As a rule, all members should be assigned full time to the project. Speed is of the essence here, and part-timers tend to be so distracted by other responsibilities that they move glacially, if at all.

**Redesigning.** During the redesign stage, the team members roll up their sleeves, take the existing process apart, and reassemble it to achieve the performance goals. Here are some principles that the team should follow in coming up with the new design:

- *The final customer comes first.* Both companies need to submerge their narrower goals in service to a higher one: meeting the needs of the customer whom they work together to serve. Participants must remember that a company they have always considered a customer may, in fact, be merely a collaborator in serving the ultimate customer.
- *The entire process should be designed as a unit.* That may sound obvious, but it’s an easy point to lose sight of. Make sure all members stay focused on the big picture; otherwise, they may begin to address the process in pieces rather than as a whole.
- *No activity should be performed more than once.* Elimi-

Working on an interdisciplinary process design team is an unfamiliar experience for almost everyone; when one’s teammates come from another company and not just another department, the unfamiliarity increases dramatically. Frequently, people from one company will lack even the most basic understanding of the operations and concerns of the other. Team members therefore need to develop an appreciation for the challenges facing the other company. They must also learn that they are not representing their company’s interests but those of the process as a whole.

**Implementing.** Once the process has been redesigned, it must be rolled out. Two principles are critical to success in this stage. The first is “think big, start small, move fast.” Trying to implement a radically new process in one step is almost always a recipe for disaster. Any intercompany working relationship will be tenuous until real results are achieved, and the longer it takes to reach that milestone, the greater the risk that the whole thing will unravel. Consequently, the entire effort must be conducted with an eye on the clock. The redesign team should develop its vision for the process being revamped in weeks, not months, and it should organize the implementation so as to deliver tangible results quickly.

The second principle is “communicate relentlessly.” Redesigning an intercompany process not only changes people’s jobs, it also changes how they think about and relate to other companies. Information sharing, openness, and trust need to replace information hoarding, suspicion, and downright hostility. Without constant reminders of the rationale for the redesign, the benefits that will accrue to each company, and the expectations for every employee, the needed cultural change simply will not occur.

It’s natural for a company to get nervous about tearing down the walls that enclose its organization. The act goes against many long-held notions of corporate identity and strategy. But most companies were nervous about breaking down the walls between their internal departments

and business units, too. Some even delayed the effort – and they have spent the last decade playing catch-up with their competitors. Streamlining intercompany processes isn't just an interesting idea; it's the next frontier of efficiency. Right now, it's the best way to develop a performance advantage over your competitors – or to prevent them from developing one over you.

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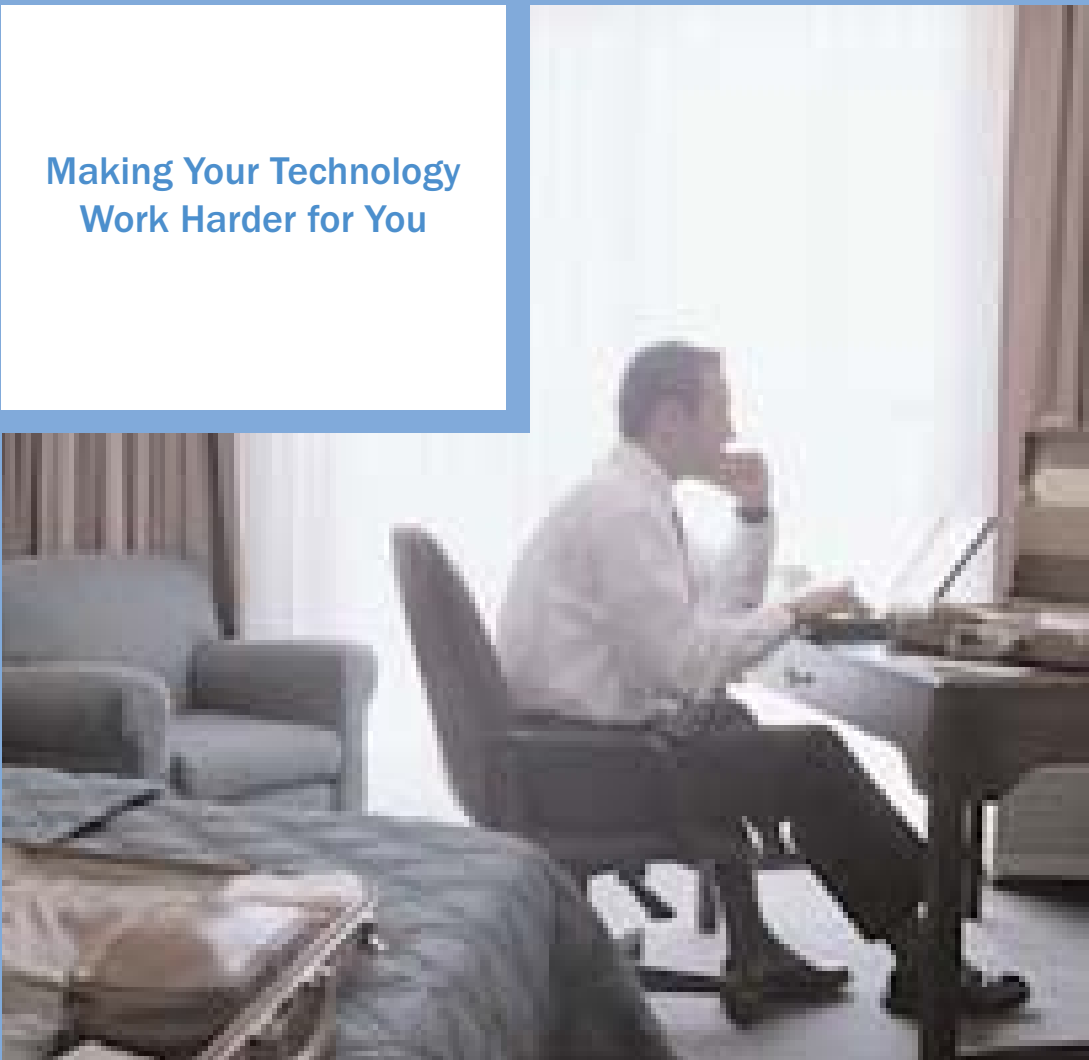
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Connecting Your People**

## Making Your Technology Work Harder for You



*“We believe that .NET will take individual empowerment to a new level, create unprecedented opportunity for businesses, and spark a renewed wave of excitement about the Internet.”*

— Bill Gates

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## Bringing it all Together

Your customers. Your business partners. That crucial bit of industry data.

They're out there. The question is not how to find them but how to connect with them.

Success today often hinges not only on finding customers, business partners and vital information in all its various forms, but in connecting with each of them, interacting and integrating each into the core systems that are central to your success.

For most businesses, the need to link existing systems—a customer service database with a sales application, for instance—provides the first real experience in connecting disparate systems. Unfortunately, this experience often proves to be difficult, expensive and time consuming.

### Why?

Software applications traditionally have been created to interact with people, not other applications. Any attempts at connecting them usually involve the software equivalent of bailing wire and duct tape. Need to link a partner's accounts receivable system to the two applications you duct taped together? Find a better application? You'll probably have to start over—another expensive, time-consuming process.

### The power of connecting

Linking an existing customer service database with a sales package represents a relatively easy-to-understand example of how connecting software and systems can provide value. The business in question can personalize customer content or more easily update customer information in the database by having the two separate systems interoperate. New products or services could be created from the combination of systems.

Imagine the possibilities when all software can easily interoperate—regardless of platform, the programming language used or the device you happen to be using.

- Business partners could be tightly linked to your systems, information and employees providing each business with the information they need in a manner that can be acted upon.
- Employees could be empowered with the information they need, anytime, anywhere on any device they happen to be using.
- New systems, products and opportunities can be created when the information held in a business can be released from the systems it is often locked in and quickly and easily acted upon.

Microsoft is working to bring about this more connected future through Microsoft® .NET, software that connects information, people, systems and devices.

# Technology on Your own Terms

## Connecting your world

The fundamental idea behind Microsoft .NET is a shift in focus from individual applications, Web sites, and devices to constellations of computers, devices, and services that connect and work together to deliver broader, richer solutions.

People will have control over how, when, and what information is delivered to them. Computers, devices, and services will be able to collaborate and interoperate with each other on a user's behalf, and businesses will be able to offer their products and services to the right customers, at the right time, in the right way.



## What is .NET?

*Microsoft .NET is software that connects information, people, systems, and devices.*

*.NET connects a broad range of personal and business technologies (from cell phones to servers), enabling you to access and use important information, whenever and wherever it is needed. Built on XML Web service standards, .NET enables both new and existing applications to connect with software and services across platforms, applications and programming languages.*

*.NET is integrated across the Microsoft platform, providing the ability to quickly build, deploy, manage and use connected, secure solutions with XML Web services. These solutions enable faster, more agile business integration, and the promise of information anytime, anywhere, on any device.*

## BUSINESS VALUE

### Case study

*Dollar Rent A Car uses .NET-connected software to drive new business partnerships. Dollar Rent A Car is a world-leading car rental agency, with a fleet of 75,000 cars and more than 250 locations across 26 countries. They saw that integrating their VMS-based reservation system directly with partners would drive sales and reduce the cost of transactions. Using .NET-connected software and Microsoft BizTalk® Server, they developed an XML-based trading partner integration solution in weeks rather than months—a 75 percent reduction in development time. The same solution helped Dollar to significantly reduce transaction costs with its partners. To get a resource and evaluation kit for this case study, go to: [www.microsoft.com/business/casestudies/b2c/dollarrentacar.asp](http://www.microsoft.com/business/casestudies/b2c/dollarrentacar.asp)*

## Connecting the Agile Business

By using the Internet to enable software applications to more easily work together, Microsoft .NET promises easier integration within and between businesses, while creating opportunities to more meaningfully connect with consumers. With .NET development tools and .NET-connected software, businesses can realize improvements in the time and cost associated with developing and maintaining their business applications, as well as benefiting from empowering employees with the ability to act on vital information anywhere, from any smart device.

### Connect with partners

Not only can companies develop integrated internal applications, they can also access services offered by other businesses. By using .NET-connected software exposed on the Internet, companies can program the Web to create a wide variety of value-added applications. For example, an automobile manufacturer could unify benefits, payroll, stock trading, and insurance services into a single, seamless financial management portal for its employees, or they could integrate inventory control, fulfillment mechanisms, and purchase order tracking into a comprehensive supply chain management system.

### Reaching out

Creating .NET-connected software in the form of XML Web services and exposing them on the Internet also provides another key advantage: it greatly expands the number of customers and business partners that can come in contact with a business's services. A large automobile manufacturer could expose an XML Web service of its delivery schedules for new vehicles. In this manner, their supply chains, dealerships as well as others, can consume the information, building other systems around it. Besides creating valuable links with partners, it creates the potential for advertising services for other businesses or customers that may not have been aware of the company or service.

Businesses derive more revenue by finding more customers, providing better customer service, and selling more to existing customers.

By using Microsoft .NET-connected software to integrate services and applications, businesses can open new markets and align with their customers' lives.

### Open new markets you couldn't reach before

With Microsoft .NET, companies can reach into markets that they would normally have been locked out of due to high integration costs. Using .NET-connected software in the form of XML Web services and exposing them on the Internet also provides another key advantage: it greatly expands the number of customers and business partners that can come in contact with a business' services.

### Understand and delight your customers

Once a business reaches its customers, Microsoft .NET will help it offer them exactly what they need at the moment they need it, making the high quality of service more of a competitive advantage. Through enhancing products and services, businesses are able to provide the customer what they are looking for, when they want it. By responding to the preferences and needs of every customer in exactly the way they want, businesses are able to provide more responsive and less costly customer service.



## Empower Employees

### Case study

*Royal Canadian Mint uses .NET-connected software to create new revenue streams. Founded in 1908, the Royal Canadian Mint was looking for new and better ways to reach out to customers for its evolving catalog of precious metal collector coins and jewelry. With .NET-connected software they were able to create a next-generation e-commerce site that delivered dynamic content management, personalization, and advanced business analytics while drawing on information in a legacy database and feeding orders through an existing ERP system. Microsoft BizTalk Server 2000, with native XML support, integrated the data seamlessly for smoother transactions and more efficient order processing. To see a webcast on redefining the online enterprise, visit: [www.microsoft.com/solutions/msib](http://www.microsoft.com/solutions/msib)*

.NET offers the promise of allowing employees to act on the appropriate information where and when they need it. It facilitates better decisions by giving people in the field, at the office, and anywhere in between the information they need in a suitable and useful form. Important client information, once locked away in isolation on a mainframe, can more easily be accessed and acted on by a salesperson on a handheld computer across the country. A contact or appointment added to a Pocket PC by a project manager while at a job site can instantly be accessible to members of the same team scattered around the world.



# Making the IT Department Your Secret Weapon

## Driving the next-generation Internet

Web sites are designed to interact with people. They do a good job of displaying static information. But when there is a need for applications to interact over the Internet, Web sites aren't adequate. For businesses to truly harness the power of the Internet, Web sites and software must evolve. They must learn to interact with one another, so that it becomes as simple to derive value from the connections between applications as from the applications themselves.

## XML Web services

XML Web services provide the means for that evolution. XML Web services let software on computers and mobile devices connect and interoperate with each other, both inside your company, and with external partners and customers. By having a standardized means to connect, integration is now quicker, easier, and more flexible—and can work across platforms, programming languages and applications. XML Web services provide the foundation for Microsoft .NET and .NET-connected software.

## Connecting internal systems

.NET-connected software offers incredible value to organizations. It presents the opportunity to bridge applications and information written in different programming languages and residing on differing platforms. In this manner, applications from departments such as HR and Accounting can expose information as XML, sharing information in order to create a new benefits application.

A .NET-connected payroll system could be combined with an employee database, an internal benefits package system and an external financial planning service to allow for a seamless benefits experience for employees. Each of the above examples of .NET-connected software would today represent an isolated Web site or software application—the interactivity between them largely restricted to users logging into each Web site or application separately and reentering information. .NET-connected software gives businesses the opportunity to concentrate on their key business strengths by making it easier to outsource other non-critical services.

## New opportunities

With .NET, corporate IT departments will share in the ability to create new and novel revenue streams. By exposing key business processes that were typically locked in internal systems, the enterprise can create a number of new and exciting opportunities to make money. For example, a tax engine created for internal use could be exposed as an XML Web service, enabling other companies to quickly and easily use the functionality, thus, providing a new revenue stream.

## Microsoft .NET Technologies

### Web Services Interoperability Organization

*For the promise of interoperability through XML Web services to be realized, it becomes increasingly important to ensure that the interpretation and implementation of XML Web service specifications be consistent and agreed upon by the entire industry. The Web Services Interoperability Organization (WS-I), co-founded by Microsoft and other leaders in the software and technology industries, is an organization committed to promoting interoperability among XML Web services based on common, industry-accepted definitions and related XML standards support.*

*WS-I will provide the guidance, tools, and test materials necessary to ensure that Web services created using industry standards will interoperate with one another—across different platforms, applications, and programming languages. By working with industry leaders and standards bodies, WS-I will help advance Web services in a structured, coherent fashion.*

.NET is integrated across the Microsoft platform, providing the ability to quickly build, deploy, manage and use connected, secure solutions with XML Web services.

### Tools

Microsoft developer tools provide quick and easy means to develop XML Web services. Microsoft Visual Studio® .NET is a multi-language suite of programming tools for building .NET-connected applications. The .NET Framework is a component of Microsoft Windows® that provides a programming model and runtime for XML Web services, Web applications, and smart client applications.

### Clients

Microsoft is currently delivering a set of operating systems for computers and other smart devices, including Windows XP and Windows CE. This smart client software helps PCs and devices work more effectively for you—online or offline.

### XML Web services

Microsoft and others are developing XML Web services—from authentication to calendaring—that can be combined with other XML Web services or used directly with smart client applications. Microsoft MapPoint®.NET, for example, is an XML Web service that allows you to integrate high-quality maps, driving directions, and other location intelligence into your applications.

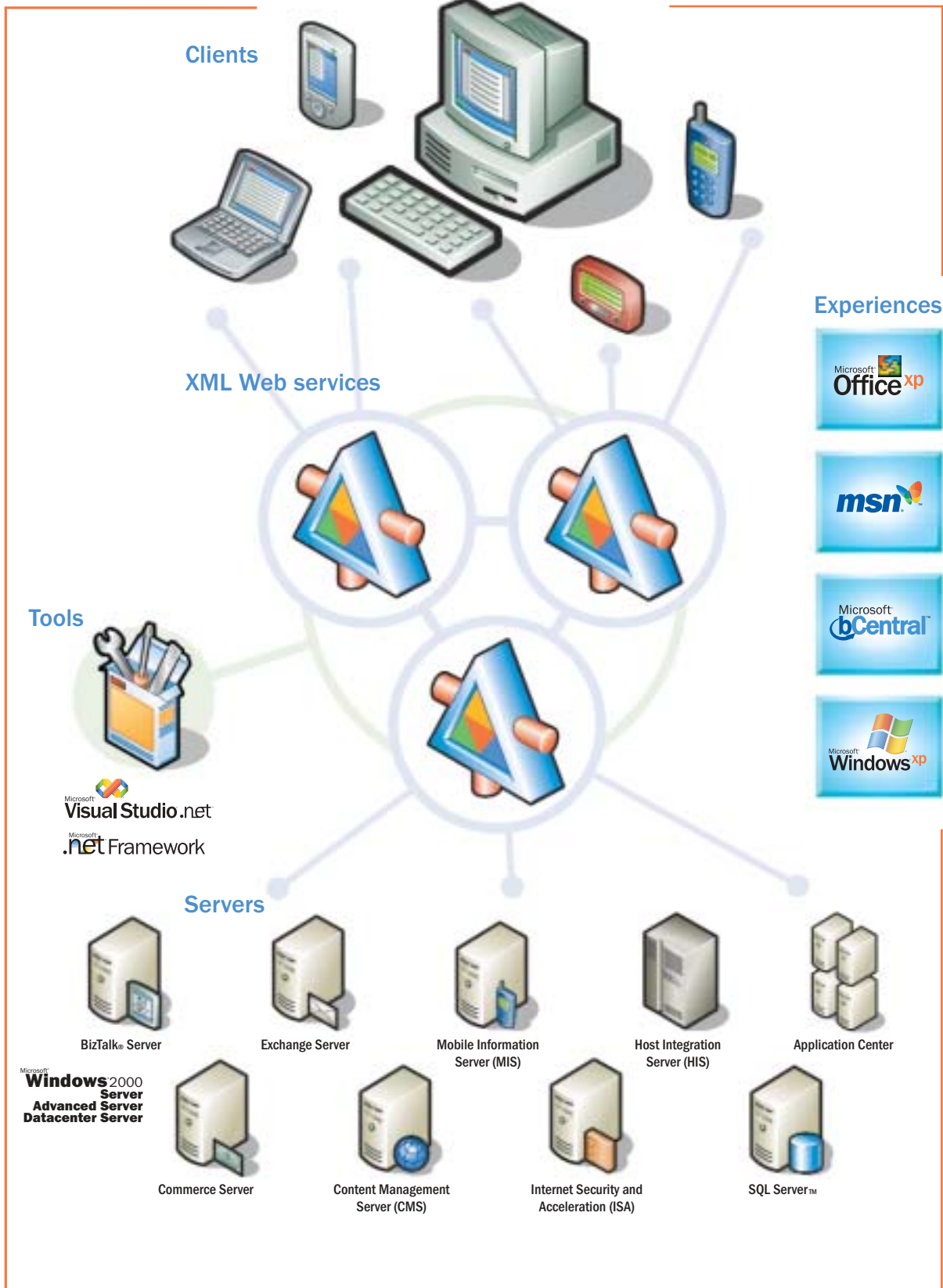
### Servers

Microsoft Windows and the Microsoft .NET Enterprise Servers are the best infrastructure for building, deploying, and operating XML Web services. They include support for XML, scale-out solutions, and business process orchestration across applications and services. Designed with mission-critical performance in mind, they provide companies with the agility they need to integrate their systems, applications, and partners through XML Web services, and the flexibility to adapt to changing business requirements.

### Experiences

By using XML Web services to add valuable information and functionality to the applications you use today—such as Microsoft Office XP—and future smart client applications, individuals can enjoy a more personalized experience. For instance, directions to a party could be automatically added to invitations in Microsoft Word by using the Microsoft MapPoint .NET XML Web service.

# Microsoft .NET Technologies (Map)



## Your Path to a .NET Future

Microsoft .NET is here today.

Everything a business needs to build, host, deploy and use .NET-connected software is currently available: from the rich set of developer tools in Microsoft Visual Studio .NET and the .NET Framework, to the Windows family of servers, including the Microsoft .NET Enterprise Servers.

A number of services including .NET Passport for authentication, .NET Alerts for notifications, and the MapPoint .NET XML Web service for direction and map-based information can be integrated into business systems today.

Microsoft Windows XP and Windows CE provide the platform on which to run .NET-connected applications.

### What your business should do...

#### Five steps to getting .NET

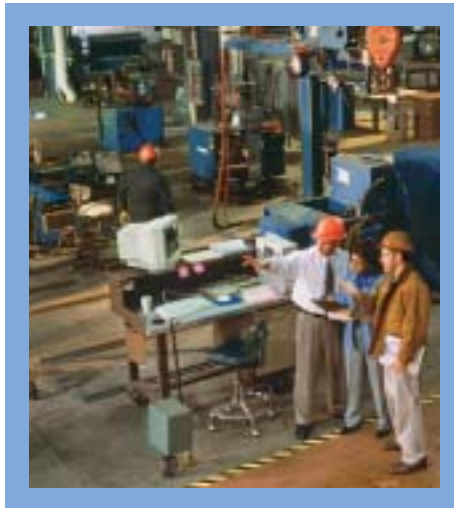
1. Learn more about .NET and the next-generation Internet by visiting [www.microsoft.com/net](http://www.microsoft.com/net)
2. Discuss your company's XML Web services strategy with your IT department.
3. Meet with a consultant who specializes in .NET-connected software and explore the impact it can have on your business.
4. Take the first step towards connecting more closely with customers, partners, and employees by deploying pilot projects using XML Web services based on .NET-connected software.
5. To ensure interoperability and long-term value, insist that your IT department base all future solutions on .NET-connected software.

## The Microsoft .NET Connected Logo

Though Microsoft is working to provide the best foundation for building, hosting, deploying and using .NET-connected software, the vast majority of XML Web services and applications that participate in this connected universe will be developed by the rest of the industry including Microsoft partners, customers and third parties.

To recognize and promote the applications and XML Web services that connect using .NET, the Microsoft .NET Connected logo is being introduced.

Information on the .NET Connected logo program can be found at <http://microsoft.com/net/logo>



## .NET Shared Opportunity



True interoperability—across platforms, programming languages and devices—offers the opportunity to work better together. As systems begin to easily link together, business relationships will become deeper, the amount of time, effort and expense of working with partners will decrease, and information will be freed to be used when it is most needed.

Microsoft is committed to helping businesses better connect with their customers, link systems that are both inside and outside of their four walls and empower people with the information they need, when they need it. Through the use of .NET-connected software, these goals can be realized today.



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