



OPTIMIZING YOUR BUSINESS RELATIONSHIPS

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

The Superefficient Company

by Michael Hammer



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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

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HAVING 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-

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

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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.

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

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.

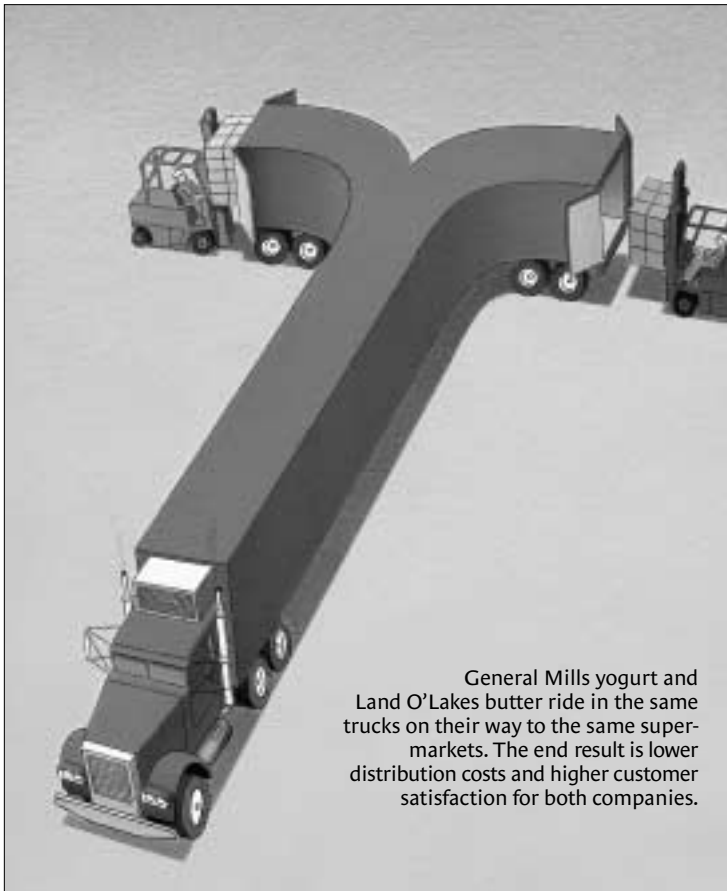
For one thing, the suppliers at the opposite end of the chain from HP had no idea how many monitors HP would actually need; they often didn’t even know that HP was the ultimate destination for their resin or compound. Consequently, each had to carry a lot of inventory in case an HP order came barreling 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

sponsibility 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-



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 com-

pany 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

STAGE	1 Scoping		2 Organizing	
ACTIVITIES	Identify the appropriate business process to redesign	Select a partner	Establish an executive steering committee	Convene a design team
KEYS TO SUCCESS	The process should offer substantial opportunities to enhance overall business performance, and it should already be operating at peak internal efficiency.	The partner should have a strong interest in the initiative; be experienced with internal process redesign; make decisions quickly; and have a collaborative culture.	The steering committee should convene early and should include leaders from both companies. The committee should define each company's investments, roles, and share of benefits; establish procedures for resolving disputes; and establish performance measures and goals.	The design team should have between six and 12 members committed full-time to the project. The team should include members from both companies and should include experts in existing processes, in process redesign, and in change management.

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.

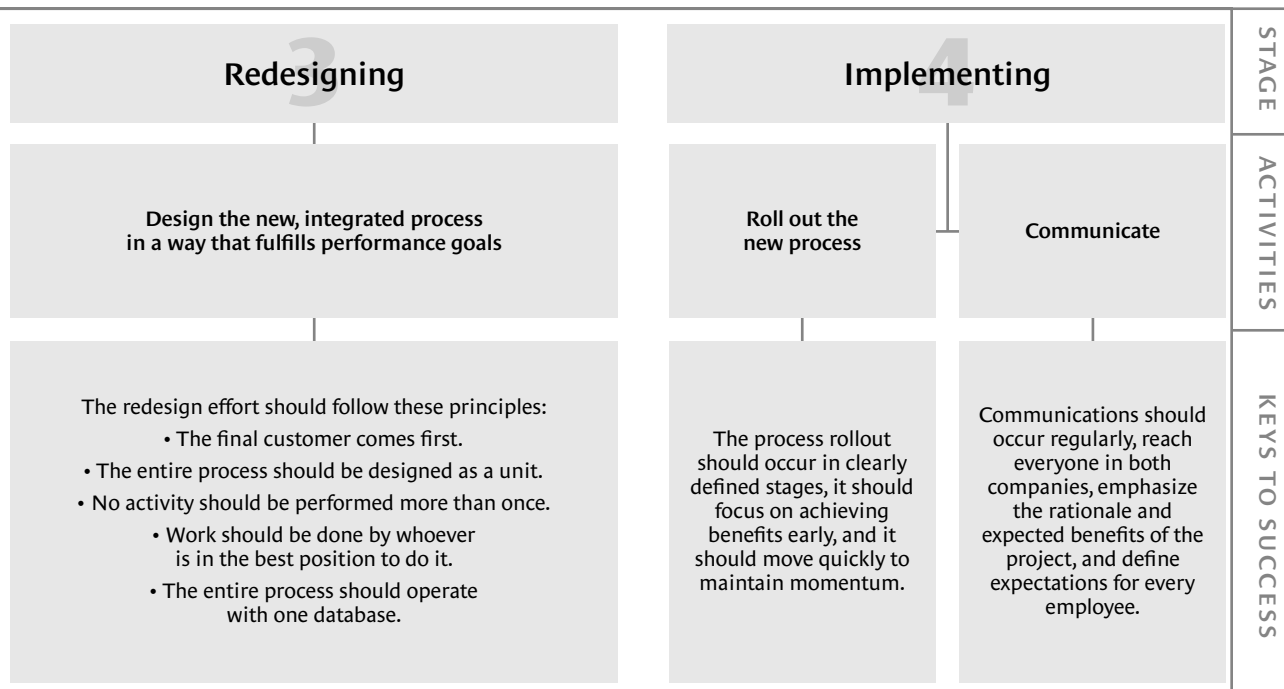
Making It Happen

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.* Eliminating 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. 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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WHAT IS ONE OF THE BIGGEST OPPORTUNITIES?

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The business world is moving at an accelerating rate: deregulation produces mergers and new competition; customer expectations grow; economic pressure means doing more with less; industries shift suddenly. More than ever, businesses must adapt quickly to survive.

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The last few decades have seen an explosion of new information technologies for business. Advances in hardware capabilities and increases in software sophistication have helped businesses automate processes, keep better track of their data, and offer their customers new services and products at greater speed. Many businesses have made intelligent, strategic use of IT to grow and maintain their market opportunities.

However, when it comes to IT, businesses can sometimes feel like victims of their own success. After years of acquiring new technology they find themselves with a range of complex applications and systems that do not interoperate. The power and potential are there, but the expense of simply operating and maintaining these complex systems means that businesses are treading water, getting less than they might out of their IT investments.

Often IT complexity stands in the way of IT potential, making investment decisions difficult. It can cause businesses to focus too much on technology and too little on productivity and business practices—too much on widgets and functionality and too little on access, action, and innovation.



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required to make software applications better connect with one another is a problem that can only be solved at the industry level. Web services representing a set of industry-accepted standards and protocols solve some of the pains of software integration. Microsoft, through research, innovation, and the application of Web service technology across the Microsoft platform, is a leader in this exciting area.

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challenges

Working Together: The Integration Imperative

This chain of events is probably familiar: market pressures create the need for cost savings; cost savings drive calls for efficiency; efficiency pushes for streamlining; streamlining demands integration. It is at the point of integration where business needs and IT constraints collide. Integration has typically been an expensive, time-consuming, difficult proposition: sometimes possible, always problematic. The effort

have captured the everyday, essential activities in software programs on the desktop—payroll, accounts receivable, spreadsheets, and word processors—and supported them with the often invisible level of infrastructure and systems in the back room.

However, there is another dimension of business which is the everyday practices of gleaning insights, making decisions, being accountable, reacting to change, and coordinating resources. These practices occur in the boardroom and on the front lines. From the shop floor to the top floor. Many of today's challenges with technology stem from disconnects between these

business practices and the technology we so often rely upon. To ensure the maximum amount of value and benefit, IT must be aligned with business and be driven by solid business strategies.

Getting More from IT Investments

Budgets are limited. Demand is great. Time is short. Businesses require getting the most out of what they have and deriving more value from any new technology. Efficiency, however, should not come at the expense of agility. Cutting costs and streamlining must balance the fine line with being able to rapidly



adjust to change and to take advantage of future innovation. While driving costs down has been the prime focus recently, delivering new capabilities from existing and new assets is on the rise. Businesses in all industries are finding new ways to capture value in existing assets and creating opportunities through revolutionary IT solutions.

solutions

THE POWER OF INNOVATIVE SOFTWARE

Software continues to provide answers to these business challenges. It represents intellectual "glue" that connects ideas and creates possibility. It provides a means to better capture the way business and government works and map that to existing commitments and technology. As each rapidly advancing generation of innovation builds on the last, software continues to drive business, government, and human potential further than ever previously expected.

Microsoft is committed to pushing the boundaries of software innovation to ensure that the promise of technology continues to be realized.

a platform FOR THE FUTURE

The Microsoft platform is used worldwide across all industries to help businesses and their customers realize their potential. By using innovative technology, Microsoft software works to bridge the gap between desire and outcome, between technology and results. Through a range of integrated products and technologies, the Microsoft platform offers a means to connect existing systems, link business with technical processes, and achieve the best economic value for technology investments.

Integrated Platform

The Microsoft platform provides end-to-end technology for the way business gets accomplished, including:

- Leading tools, including **Microsoft® Visual Studio® .NET**, for developers to build applications and systems
- Databases from the **Microsoft Windows Server System™** to hold and manage data and complex IT infrastructures
- Mobile solutions including the **Microsoft Office System** and **Microsoft Business Solutions** driving business results across industries, that help managers and employees maximize their efficiency and productivity everyday
- User experiences through **MSN®** and **Hotmail®** to **Xbox®** and **Microsoft TV** that enrich millions of lives everyday providing new ways to touch customers

WEB SERVICES

What are Web services? If you ask a developer, you'll hear something like, "self-describing software modules, semantically encapsulating discrete functionality, wrapped in and accessible via standard Internet communication protocols like XML and SOAP."

If you ask a business leader who has implemented Web service-based solutions, you'll hear a different kind of answer: Web services help the business connect with customers and partners; they enable the business to extend existing services to new customers; they unlock information so it can flow to every employee who needs it; they reduce development time and expense for new projects. You'll hear less about what Web services are and more about what they enable the business to do.

"Microsoft's vision around everything connected is directly in line with where we want to take Dell in the future," says Michael Dell, Chairman and CEO of DELL, "and Web services deployed on .NET will help us succeed."

Connected Systems

Building on the Microsoft platform enables increased connectivity for businesses with the ability to integrate Microsoft and third-party technology in modular ways. This provides for high degrees of reuse and greater flexibility in evolving applications over time. Built on Web service standards, Microsoft .NET connects a broad range of technologies, enabling people to access and use important information, whenever and wherever it is needed.

.NET is the comprehensive Microsoft strategy to enable Web service connectivity across its entire line of products and services. The outcome is an increased ability to more easily connect new systems with old, break down barriers between partners and suppliers, as well as bridge existing data in systems in ways that create new value.

Best Platform Economics

Microsoft technology has the advantage of lower total cost of ownership, with performance equal to or better than competitors. Organizations can use Microsoft software to get more value out of legacy systems or can reduce the cost of IT operations by migrating from expensive UNIX platforms, porting enterprise applications to Microsoft Windows®, and consolidating servers.

Using the familiar Microsoft Office interface for data helps minimize training costs and boosts the productivity of anyone using these tools. Building applications with Visual Studio .NET, in use by more than 2.5 million developers worldwide, enables businesses to tap into a deep pool of affordable developer talent. Choosing Microsoft technology also comes with the added benefit of an unprecedented partner ecosystem that includes more than 35,000 Microsoft Certified Partners who can address any business problem.

five ways

TO CREATE BUSINESS VALUE

Let's take a look at five different ways that businesses can create value, and how Microsoft software can help them do it.



1 INCREASE EFFICIENCY

One way to streamline processes is to link up systems so that they can interoperate without manual intervention. This allows processes that once involved multiple systems, the manual re-entry of data, and duplication of efforts to be streamlined, saving time and money.

The **Annie E. Casey Foundation** asked Ajilon Consulting to find a way to accelerate the processing and delivery of its cash grants. Ajilon Consulting used .NET-connected software to create a sophisticated, single point of access connecting the Foundation's various systems. As a result, Foundation staff can work more productively both at the office and in the field, and grant-processing time has been reduced by up to 40 percent. "I wouldn't be surprised if we didn't expand the .NET application in two or three years to handle the entire grant management process," says the Foundation's Director of Technology and Information Management, Henry Dennig.

Another way to increase operational efficiency is to adopt best practices regarding technology and use it as a driving force for the rest of your business.

In the nearly four years since its launch, **JetBlue Airways** has grown into a \$300 million business serving more than 4 million travelers in 16 U.S. cities. The company pioneered the paperless cockpit, including paperless pilot manuals; it also offers handheld wireless check-in and is looking seriously

into building systems using SmartCard technology, biometrics, and wireless data links to its planes.

"The way technology is going, there's a tremendous advantage for companies starting out fresh, companies that aren't tied to a legacy environment," says Jeff Cohen, JetBlue CIO and vice



president. "We've taken this advantage to the fullest, embracing and implementing new technology to the benefit of employees and customers alike." By using Microsoft technology and maintaining a Windows-only environment, JetBlue's IT budget remained only \$19 million, or 3 percent of the company's \$635.2 million in revenue in 2002. (source: *Computerworld* 3/11/2003).

Taxation Office created the **Australian Business Register (ABR)**, a company registry interoperating with all federal, state, and local agencies that serve and regulate the business community, making it easier, faster, and less costly for businesses to deal with government. With ABR, the relationship between government and business has been greatly simplified. Companies can now take care of all their government business through a single entry point rather than deal separately with many diverse federal, state, and local government agencies.



2 CONNECT WITH CUSTOMERS

Now more than ever, customer loyalty is at a premium. All businesses seek ways to better understand and serve their customers. Beyond Web pages and email, technology increasingly plays a decisive role in connecting businesses with consumers, governments with constituents, and academia with students.

By connecting systems behind the scenes in order to offer customers simple, user-friendly interfaces into complex processes, the Australian

Another way to connect with customers is by providing new functionality based on customer feedback. For instance, an important driver in converting Web site browsers to buyers on **Dell.com** is providing accurate tax and shipping costs. With .NET-connected software, Dell created Web services that use information in U.S. Treasury Department databases to deliver state tax rates and information and information from United Parcel Service and U.S. Postal Service databases to determine shipping status. This approach ensures that the prices customers see in their shopping carts is current and accurate for their specific location, and consistent across all of Dell's business units. This modular, re-usable solution, which had presented a challenge for Dell in the past, was developed with .NET-connected Web services in just

eight weeks. The tax and shipping Web services are used more than one million times a day by gratified customers on Dell.com.

3 REACH OUT ACROSS VALUE CHAINS

Beyond the supply chains of physical goods, parts, and suppliers are the supply chain of information. These information supply chains exist everywhere: between partners, dealers, distributors, employees, and customers. Across industries—whether tracking records, preferences for particular

products, or inventory numbers in a supplier's database—information takes on greater importance as businesses seek to streamline and integrate. The ability to connect these information supply chains as well as to provide the tools to turn information into knowledge and action is held in innovative software.

Consider the information supply chains of a large pharmaceutical manufacturer. The business of creating new drugs and testing them is an expensive one. Days and weeks of conducting clinical trials on drugs that do not eventually go to market represent time and money that could go to other potentially profitable medications. Using Microsoft software, **Merck & Co.** developed a solution that cuts costs by streamlining the clinical trials process and automating many trial management functions. The application, which integrates not only leading-edge vendors but also legacy systems, helps ensure that the company

meets all applicable regulatory requirements, improves data collection accuracy, and accelerates time to completion. In doing so, it lowers the cost of getting new drugs to market and shortens the cycle time, so the company can start generating revenues sooner—all while maintaining the high quality that Merck demands from its clinical research. And, using the Microsoft platform, developers were able to complete the solution in just one year—not the five years that they initially estimated.

Microsoft software and .NET-connected Web services enable businesses to expose internal processes and functionality to partners, increasing opportunities for integration and efficient collaboration. By removing many of the technological barriers between businesses, Web services enable dynamic partnerships that can be made and altered on the fly.

Using Microsoft .NET-connected software, **Danske Bank** was able to expose its mainframe functionality in a standardized manner as Web services, and reuse this functionality across a range of brands and customer audiences. The first Web service that Danske Bank chose to make available to customers was a quote service for stock prices. This Customer Quote Web Service was built to enable one of Denmark's largest newspapers, *Politiken*, to access quotes from

MICROSOFT .NET

.NET is the Microsoft Web services strategy to connect information, people, systems, and devices through software. .NET is integrated across the Microsoft platform, providing the ability to quickly build, deploy, manage, and use connected, security-enhanced solutions with XML Web services. These solutions enable faster, more agile business integration, and the promise of information anytime, anywhere, on any device. The Microsoft platform includes everything a business needs to develop and deploy a Web service—connected IT architecture: servers to host Web services, development tools to create them, applications to use them, and a worldwide network of more than 35,000 Microsoft Certified Partner organizations.



the bank's mainframe and make them available as a free service to customers. Danske Bank has exposed its brand name to the entire audience of *Politiken* readers—exactly the mass-market audience that the bank wants to reach—and presented its retail banking brand as an integrated part of the newspaper's online presence. The bank achieved this broad exposure to a

key market without paying for advertising, while both development costs and incremental costs to generate the stock quotes are minimal.

4 INNOVATE: DRIVE PRODUCT LEADERSHIP

From driving down cycle times to augmenting new products, software provides an engine for driving innovation. Through software, products can be designed quickly and collaboratively. Increases in processing power and the decrease in the



size of chips enable the ability to more easily embed functionality, augmenting products with software.

When **Johnson Controls** began designing the next version of its Metasys Building Management System—a combination of electronic components and software programs that automate a building's core systems, helping owners and managers of commercial, institutional, and government facilities worldwide to maximize comfort, productivity, safety, and energy efficiency—it needed a technology platform with rich,

portal lacked the customization, personalization, and interactive features the college required to provide the best possible service and introduce students to the technology they would face in the workplace, so the college developed a solution based on the Microsoft .NET Framework.

Now, students and faculty conduct all college business through the portal. Students identify open courses and register online, faculty enter grades online, and vendors can receive purchase orders and provide invoices online. The college is delighting its users, boosting revenues by expanding corporate programs, and has saved \$3 million in IT costs.

Beyond satisfying users, the .NET portal has enabled the college to move aggressively into new markets, such as the market for corporate college programs. The college is now the largest two-year provider of education programs to the U.S. Navy and serves more than 20 other corporations and government bodies. With the portal up and running, the college's distance learning program has increased from 6,000 students to more than 14,000. That 135 percent increase in enrollment has brought the college millions of dollars of additional revenue, which .NET has made possible.

MICROSOFT WINDOWS "LONGHORN"

Microsoft is currently in the early stages of building the next version of Windows, codenamed "Longhorn." It is being designed to provide the foundation for a new industry wave of innovation—ultimately enabling businesses to use technology more effectively, with far fewer barriers, while enabling customers to better realize the full benefits of technology.

Current technologies such as Windows XP, the .NET Framework, and Visual Studio .NET are the first step towards the realization of a new model of computing, one designed around end-to-end experiences that improve the productivity and decision-making abilities of organizations while informing and entertaining customers at home. "Longhorn" continues these advancements as personal computing becomes a powerful asset in the everyday lives of millions of people worldwide.



accessible functionality, a highly productive tool set, and comprehensive support for Internet standards. They chose the Microsoft platform.

Exposing the functionality of the Metasys system through Web services makes facility data more accessible and actionable, which will help building owners make better facility decisions and run their buildings the way that they want to instead of the way that technology limitations dictate. In addition, the standards-based approach of the solution decreases complexity and increases user productivity.

Florida Community College in Jacksonville, Florida is ranked as the second most wired two-year college in the country. It had a Web portal, but that

5 ENHANCE CORE BUSINESS PRACTICES

Garnering insights. Capturing and using information. Making decisions. These are the fundamental business practices at the heart of how people conduct business. Software provides the promise and opportunity to improve these processes.

Abitibi Consolidated, Inc., is the world's largest producer of newsprint and value-added paper. The company faced a Y2K-type deadline in 2001 when its home province of Ontario confirmed plans to deregulate the electric power market. As a buyer of more than CDN\$100 million in electricity annually for its five mills in Ontario, the company was challenged with the task of installing systems that would allow

OSIsoft, Inc., they were able create and deploy a solution in under six months that linked 18 mills and various systems to Windows-based human-machine interface (HMI) software and the new Independent Electricity Market Operator (IMO) Web site. The resulting solution enables Abitibi to purchase electricity at night and use its own generation during the day. When the price is high it can elect to shut down some equipment or the entire mill if the situation demands. Having this overview of the



the company to better monitor power consumption to match the fluctuating market pricing and availability so that it could afford to maintain production in the newly deregulated environment. Working with

entire system is important because Abitibi is not only concerned with power purchases, but wants to maintain its water level behind the dam.

The new solution has provided a more granular view of costs and supplies, which has helped to fully optimize energy costs. Abitibi can now view pricing on a basis of five-minute increments or any average up to one year. The project was accomplished within

a total budget of only \$77,000, using existing internal staff, instead of an estimated \$3 million plus \$450,000 a year for support and maintenance for off-the-shelf solutions. They estimate that, by giving management such an effective tool to proactively optimize production around market conditions, they could realize a \$1 million reduction in electricity costs in just its first year of use.

Consider Dell's experience. **Dell** is smart in its approach to IT. While willing to use cutting-edge technology, the company does not invest in the newest thing because it's the newest thing. It assesses each new technology in terms of how it can help better serve customers and grow the business. It approached .NET-connected Web services the same way.

Dell's use of Web services began with a pilot project called Webslinger, a set of five Web services created to enhance the functionality of its industry-leading e-commerce site, Dell.com, which receives more than a billion page requests each quarter.



Remarkably, Dell—with the help of Microsoft and its Certified Partners—was able to launch Webslinger in just eight weeks. Within a single business quarter, it saw concrete benefits. Returns based on mistyped address information declined significantly and the number of site visitors who became buyers increased.

.NET-connected Web services met Dell's gold standard: they enabled a better customer experience and created measurable value for the business. Webslinger's success led them to adopt a more pervasive .NET-connected IT infrastructure across their entire enterprise. "Web services and Microsoft .NET technology help us meet our key business objectives," says Michael Dell, Chairman and CEO of Dell. "Microsoft's vision around everything connected is directly in line with where we want to take Dell in the future, and Web services deployed on .NET will help us succeed."

Looking Ahead, Getting Started Today

Technology changes. Trends come and go. To succeed tomorrow you must first survive today.

The Microsoft platform and the extensive network of Microsoft partners offer an end-to-end platform on which to create business solutions and business value today, while preparing for the coming advances and possibilities. Building on a history of continued software innovation, Microsoft will continue to lead in creating solutions that allow business and technology to combine, creating value and opportunity. By beginning today—whether creating internal applications with Microsoft developer tools, increasing productivity with business applications on the desktop, or by relying on a Microsoft partner to provide a specific solution—businesses can begin to realize their full promise and potential.

"The amount of revenue that we have already protected in the first six months has more than covered our cost of development. Now, that's what I call price performance," said Martin Wilkinson, Profit Protection Manager for Marks & Spencer, which used Microsoft .NET-connected software to automate its manual Profit Protection program, and reduced fraud by 10 percent.

links for more information

With .NET, Florida Community College enables customized portal, boosts revenues, saves \$3 million
<http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=13854>

.NET-connected building management system from Johnson Controls makes facility information more accessible and actionable

<http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=13890>

Danske Bank uses Visual Studio .NET, Web services to generate new revenue sources

<http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=13756>

Merck uses Visual Studio .NET and the .NET Framework to integrate with leading-edge vendors and legacy systems

<http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=13577>

Dell Computer pioneered the direct selling of made-to-order PCs to end users

<http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=12089>

Microsoft XML Web services enable whole-of-government interactions with Australian business community

<http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=13526>

JetBlue Airways builds on early successes and maintains technology lead with the help of Microsoft .NET and Visual Studio .NET

<http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=11168>

Annie E. Casey Foundation leverages Visual Studio .NET and XML Web services to get help to kids faster

<http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=13775>

Using RtPM to optimize power purchases saves Canadian paper maker more than \$1 million in the first year

http://www.osisoft.com/casestudies/5_483.aspx





