

THE STRATEGY MACHINE

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Chapter 4: The Information Supply Chain

Creating New Value from New Information

[FROM A TO Z: NEW VALUE FROM AN INFORMATION SUPPLY CHAIN. FROM VERTICAL INTEGRATION TO VIRTUAL INTEGRATION. NEW LINKS AND NEW COMPETITORS. EXPANDING YOUR STRATEGIC FUNCTIONS. THE PROBLEM OF PRIVACY.]

THE VALUE OF A-TO-Z

In the exchange and emergence stages, information about the supply chain takes on independent value, repackaged and sold as financial instruments, marketing databases, and a whole range of new products and services yet to come. As the new supply chain emerges, in fact, you may find that information about products can be worth more than the products themselves, especially when, as we saw with prerecorded music, the physical product simply disappears, replaced by services of which Napster may prove to be an early incarnation.

If you are having difficulty seeing how information in your own supply chain can evolve into valuable products and services, consider a pre-Internet example: TV Guide. Launched in 1953, the magazine is an information product in the sense that it describes programs being broadcast on network and cable channels—when they are going to be on, what they are about, perhaps what the critics have said about them. Its function is to consolidate data from several sources and present it in formats that are specific to the days of the week and to the scheduling and channel variations of different parts of the country.

Despite the fact that TV Guide is “simply” information about the programs, its value is tremendous. In fact, according to Andy Lippman of the MIT Media Lab, the magazine has consistently made more money than all of the networks—that is, the owners of the programs themselves—combined. What the founders of TV Guide recognized was that there is more to television than the supply chain that produces, markets, and distributes programming. There is also a parallel structure, one that manages data about transactions: an information supply chain (ISC).

Like canal builders dredging and then widening, companies build and improve the ISC throughout metamorphosis, introducing new data and improved networks that make

it possible for information to flow from one end of the supply chain to the other. The ISC does more than just describe its physical counterpart, however. It is an independent source of value, turning information into products and services that can be sold back to supply chain participants and other interested parties such as advertisers.

The better the ISC, the more opportunities to use it as a generator of new value, just as the founders of TV Guide have done for years. Or consider industrial information services, including A. C. Nielsen, Morningstar, and Dun & Bradstreet, who make money from their superior knowledge about the performance of other companies. A good (or bad) word from Moody's or Standard & Poor's, the two companies that rate corporate debt, can have a dramatic impact on your company's ability to borrow money and perhaps your stock price.

ISCs can be built for any supply chain. Even in smokestack industries like chemicals and steel, valuable information is created at every step of every transaction. Today much of it is lost, or captured only on paper, or in systems that cannot communicate across organization borders. For many companies, just being able to get their own information from one department to another is a significant challenge. Sharing it outside the organization, even to trusted trade partners, may be impossible.

Many of today's most ambitious software applications, in fact, are efforts to build one part of the ISC, often undertaken to repair the most broken links. A manufacturer may see its worst problem as sourcing raw materials in the global market, and start a supplier exchange. An insurance company may feel limited by the reach of its network of owner-agent offices, and build a sophisticated Website to sell directly to its customers. In some industries, particularly those coming off long histories of regulation, the supply chain may be so weak that partial repairs like these can yield benefits for years to come. But eventually the easy fixes get done, and the real work begins.

Without the complete ISC, the information these new applications collect will never reach its full potential to generate value. It does little good to improve the process for making a consumer product like soap, only to deliver it to a retailer who has no way to determine how much it needs or how much it has sold. By the same token, Wal-Mart, even with its exceptional information systems, cannot reorder soap at precisely the right time if the manufacturer has a poor production forecasting system or lacks strong links to its suppliers of raw materials. Wal-Mart will know exactly how much soap it needs at which locations, but the manufacturer will be unable to deliver it.

In the long run, real benefits will flow to those who use technology to create new supply chains that tie the entire process together from purchasing raw materials to consumption. Begin by controlling your own information, then expand your visibility in both directions, until you connect every link in the supply chain. It is a strategy that might have the motto, "We make it. We sell it. We deliver it. We service it." It is the connection of business-to-business and business-to-consumer into a single ISC—not B-to-B or B-to-C. Just A-to-Z.

Finding the New Value

Where does the new value come from? In part, the ISC will yield efficiencies that cannot be achieved without complete visibility. The ISC improves every connection in the supply chain—tracking the sourcing and movement of raw materials, pinpointing the location of

products in transit, and providing on-demand snapshots of consumer demand broken down into ever-smaller market segments—even markets of just one consumer. A complete ISC, which can move information not just from producers to consumers but also in the opposite direction, does much more than improve productivity, however. Its feedback loop can describe how products have been used and by whom. Knowing how consumers experienced a product or service, in addition to what they bought and when, will be a phenomenal source of value. And it will be new value, not simply an improvement in productivity.

We have already seen that information about a transaction can be more valuable than the transaction itself. TV Guide “merely” describes the program offerings of broadcasters, yet 33 million people read the magazine every week. And that is just the beginning. In 2000, the company was sold for \$10 billion to Gemstar, owners of cable TV preview channels and the VCR-Plus system for simplified VCR programming. The combined company has leveraged the information collected and organized by TV Guide to create an interactive guide and navigator, giving viewers the ability to sort listings by category or individual preferences, issue reminders that signal the TV when programs are about to begin, and perform intelligent searches. The interactive guide is one of the new products and services made possible by the company’s control of the ISC.

Think about how your own industry could generate new products and services from a complete circuit of information, and you realize that the process has already begun. Consider these examples:

Customization—Make exactly what each customer wants, but still mass-produce it.

Durable goods manufacturers including Electrolux and Whirlpool have been putting software in their products to receive new programming and, not incidentally, build a continuing relationship between manufacturer and consumer. Electrolux leases some of its machines and, via a connection to the Internet, charges customers only for their actual use. Whirlpool is working with Cisco, IBM, Sun, and Nokia to develop new services, such as downloading recipes to stoves and uploading performance data to signal preventive maintenance.

Advertising—Get the right messages to the right audiences.

In real estate, home buyers can now search available properties and get virtual tours of homes on-line using sites such as Homestore.com and Microsoft’s HomeAdvisor. The information flow is still incomplete, however, and intentionally so. Real estate listing services, owned by the agents, leave out critical information that would allow buyers and sellers to contact each other directly, preserving the agents’ sales commission (up to 6% of the total transaction—talk about a transaction cost!). Still, as of 2000, half of all home shoppers start with the Web, and 50 to 75% research mortgage rates on-line.

Production—Know what to make and when, down to the minute.

In agriculture, tractors and other farm equipment come equipped with global positioning systems and monitors to check weather, soil conditions, and crop performance. Using these systems, farmers can apply precise mixes of fertilizer at the optimal time. They can also share yield data with seed suppliers, who can adjust their products to maximize

yields. Equipment manufacturer John Deere & Co. is developing tools that make use of GPS-generated data to advise farmers on the complete range of farm activities, including preventive equipment maintenance.

Logistics—With visibility into product usage, distributors reduce inventory and improve delivery efficiency.

On-line drugstore PlanetRx experimented with consumer-friendly UPC scanner devices made by Symbol Technologies to simplify the reorder process for its customers. Instead of going to a drugstore or even filling out an order form on-line, customers simply scanned the items they wanted to replenish, connected the device to their computers, and uploaded the order. Customers of Sainsbury's grocery stores in the United Kingdom use similar scanning devices. Since order data begins in digital form, error rates and other costs decrease.

Trading—Turn complex products into tradable commodities, generating new financial instruments.

With all exchanges, liquidity requires that the product or service traded be easily compared with offerings from a variety of sellers, in effect treating the good as a commodity. For complex products, such as advertising time for television, sellers argued that exchanges couldn't form, because ad buyers want to match the products they are selling with particulars of a show's demographics. In late 2000, though, Heinz, working with exchange operator FreeMarkets, hosted a reverse auction to buy cable time for one of its products and reduced the two-week process of negotiating by phone and fax to two days of Internet bidding. Over time, local TV and radio ad time will be purchased by exchange, and perhaps network time as well. Beyond reducing transaction costs, commoditization makes it possible to develop new products, including futures, hedges, and other derivative instruments—just as it has in markets for traditional commodities like corn and soybeans.

FROM VERTICAL INTEGRATION TO VIRTUAL INTEGRATION

The origins of the ISC are older even than the examples just given. In some respects, they began with the first wave of industrialization and the growth of large multinational companies in the early 20th century. Strategies that connected every link in the supply chain created some of the most successful companies in history, including Standard Oil, AT&T, and General Motors. Their managers understood that transaction costs between supplier and manufacturer, manufacturer and distributor, and distributor and customer could be high. One way to reduce those costs was to buy up other companies in the supply chain and integrate the functions inside one firm, a strategy known as vertical integration. Inside a vertically integrated firm, transaction costs are sharply reduced. Instead of negotiating a contract for components, for example, all you have to do is pick up the phone—the transfer happens, and internal accounting sorts out bookkeeping details.

Visiting the first generation of large corporations in fact led Ronald Coase to his discovery of transaction costs. He wondered why firms left some transactions in the market but brought others inside, and concluded that there must be costs associated

with using the market that were not being accounted for; that is, transaction costs. The firm is not a perfect substitute, however. As firms grow both in size and geographic coverage, internal transaction costs also rise. Depending on the company and its industry, Coase believed there should be a perfect size—an equilibrium at which the firm performed only the activities it could carry out more efficiently than the market could. In his famous 1937 article, “The Nature of the Firm,” Coase concluded that “a firm will tend to expand until the costs of organizing an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of an exchange on the open market or the costs of organizing in another firm.”

The balance, however, changes over time. Since the beginnings of the industrial age, firms have expanded and contracted in cycles that are poorly understood, consolidating now, divesting later. Often, the decisions are influenced for better or worse by regulation. The availability of a tax-free spin-off, for example, may encourage some decentralization. Companies also face the very real prospect of antitrust prosecutions if they achieve too much control over the supply chain, with the definition of “too much” varying depending on the political party in power. Standard Oil, AT&T, and General Motors were all forced to sell off their subsidiaries or divest some key suppliers.

Information technology plays an important part in determining the balance, lowering transaction costs both inside and outside the firm. Some technologies lower the cost of vertical integration. Telephones made possible the kind of coordination necessary to run a global corporation in the first place. The Internet, at least so far, appears to have the opposite effect. It has been lowering transaction costs in the market more rapidly than inside large firms, shifting the balance towards smaller firms and the trend to outsource more and more functions.

The ISC represents the next stage of business evolution: virtual integration, in which you lower transaction costs without actually acquiring related companies in the supply chain. As the ISC evolves, you will acquire assets, but the focus will be on your information assets—data that describe the flow of material through the system rather than the material itself. Information assets include customer lists, product inventory and customer demand data, copyrights, trademarks, and expertise about the use and application of products. Using information technology to bring them together across the supply allows you to cut costs even as you build new products and services.

NEW LINKS, NEW PARTICIPANTS

The best way to capture new value from the ISC is to pursue virtual integration within the existing supply chain as it transforms, and use the improved information flow to expand your role into more profitable activities. For example, consider the evolution of specialized logistics providers in industries such as chemicals, automobiles, and aircraft replacement parts. Their origins begin with early inventory control systems, which started with the modest goal of making production planning more efficient by giving companies a better idea of the raw materials they had on hand. Then someone got the idea of hooking together the inventory systems of the suppliers and the manufacturers, so that vendors could manage raw materials for their customers without having to deliver the goods until the last minute.

After a few more improvements, some suppliers developed tools to consolidate demand not only for their customers, but for everybody. Soon they were making more money selling inventory management services (or credit management or quality management or logistics management) than they did producing raw materials. They even may have sold off or spun out the production assets that once defined who they were. GE Capital, which began in 1932 as an application to help smooth out the payment process for General Electric customers, can now provide the full range of financial services for any business transaction, and even offers credit cards.

As companies use the developing ISC to offer new products and services, the balance of power in the supply chain shifts, sometimes subtly and sometimes dramatically. Manufacturers who become the principal creditors of their distribution partners, as in the case of farm equipment and seed suppliers, develop powerful tools for evaluating the financial health of customers, encouraging consolidation, acquisitions, and other realignments. They also gain near strangleholds on their customers' operations.

The ISC also encourages new companies to enter the supply chain, and the new entrants frequently extract much of the initial savings generated by new data. Not surprisingly, it is often the technology providers themselves who migrate from arms merchants to combatants in this evolutionary struggle. Technology companies including IBM, SAP, Oracle, and Microsoft have grown rich by offering industry-specific products and services. Once their products become mission-critical for a large segment of an industry, hardware and software providers move into more strategic positions, providing not just gear but also consulting services, joint venture funding for new applications, and outsourced technology support.

Today, a new generation of applications is being deployed to both advance and exploit emerging ISCs. In that process, established technology providers are being joined by startups focused on using information specifically to gain leverage in the supply chain and extract value from the ISC. Ariba and Commerce One, for example, sell powerful applications that can help connect participants in an industry into a virtual marketplace. Both companies store the catalogs of participants, run exchanges, and provide other buyer and seller tools. Not only do these services eliminate waste, they also give their customers virtual access to new buyers and sellers.

Another startup, ECredit, has automated complex algorithms for credit checking, which its customers can tap into as needed, in effect outsourcing the credit function for a variety of transactions. Because the actual credit scoring takes place on ECredit's computers, ECredit's system becomes more accurate the more customers the company signs up and the more scoring it does, reducing risk for everyone while cementing ECredit's place in the supply chain.

Having learned from the success of Microsoft, Oracle, and others, these startups and dozens like them are positioning themselves from the beginning less as software vendors and more as service providers, a new kind of middleman. These new links in the supply chain change the balance of power. Today's middlemen (wholesalers, distributors, and other resellers), who are the most affected, are not surprisingly the most nervous about the introduction of these new links.

Finding Your Place

No matter how the ISC in your industry is built, your role in the supply chain itself will change along the way—perhaps dramatically. As the ISC evolves, roles and responsibilities shift, with producers expanding into transaction financing, or logistics providers taking over order processing between their customers and the customer's customers. In this sense the ISC is the catalyst for the emergence stage of metamorphosis. As the information flow becomes complete, participants in the existing supply chain (along with any new players) use data to improve their leverage and extend their reach, reinventing the original supply chain, perhaps beyond recognition.

To win this game of musical chairs, you must first identify where you are sitting today as well as the other chairs you would like to occupy. Participants in your current supply chain include some combination of suppliers, manufacturers, traders, wholesalers, distributors, agents, transporters, retailers, and consumers. Each participant typically plays only one of the major roles involved in producing, distributing, and marketing, and identifies itself in terms of that function (“We’re a wholesaler of specialty foods,” “We distribute feedstock chemicals to major producers of industrial paints,” “We’re insurance agents for State Farm,” and so on).

Crossing these traditional functions are other activities (we’ll call them “strategic functions”) that are performed, at least in part, by every company. This is where the real opportunity comes to exploit the ISC. Here’s how: The manufacturer may do the bulk of production, but everyone downstream that handles the goods will alter them at least a little, from breaking containers into smaller lots (a trucking company) to configuring and assembling complex component parts (perhaps that is your job on Christmas Eve). A retailer or distributor may provide extensive product support before and after the sale, and the consumer may be responsible for installation and testing, as with most commercial software. Every link in the chain will participate, likewise, in the financing and marketing for each transaction.

Some of these strategic functions move in the same direction as the product flow, that is, from manufacturer to consumer, while others move in the opposite direction, starting with the consumer (payment and selection, for example) and moving back up the supply chain.

The best way to exploit the power of the ISC is to take over one or more of the strategic functions for a bigger part of the supply chain, starting with your immediate partners (customers and suppliers) but ultimately extending out to both ends of the industry. The strategic functions you choose will be those that make the best use of your organization’s unique skills and experience. This will take careful analysis and a sober appraisal of where your expertise lies.

The answer you come up with might very well change the way you describe yourself as a company. Today, you might see yourself principally as a manufacturer, with the bulk of your capital committed to production assets. If there are several companies making nearly identical goods, however, it might be that your true calling is in marketing, which you can develop to distinguish your brand and charge premium prices (think of athletic shoes). Once you reposition yourself, you can begin to leverage the ISC to provide marketing and branding as a service to other companies in the supply chain.

The shift to strategic functions is not easy, and requires you to rethink how you make money as well as the allocation of assets on your balance sheet. In traditional roles, profits are a function of markups, commissions, or other crude (and often inaccurate) measures of the value added by the activity. Strategic functions are paid for through service fees, subscriptions, long-term contracts, and a variety of other methods, which necessitate more precise measures of value added. But the effort can pay off; companies that excel at a strategic function often capture more of the profit than they do today, and with less capital at risk.

The change in focus may also lead you to de-emphasize capital assets, or to transfer them to other kinds of investments, perhaps to different equipment and facilities or to fewer buildings but more professional staff. To continue the manufacturing example, you might sell off your poorest-performing product lines, buy the goods of some of your current competitors, and make your money providing advanced customer service.

Consider these examples of companies already expanding to fulfill strategic functions across the supply chain:

- **Financing.** Automakers have extended the reach of their financing to cover much of the supply chain, supplementing their production roles with banking activities. (GMAC, the finance arm of General Motors, finances mortgages as well as cars.) In 1998, in anticipation of bank deregulation that came a few years later, new federal banking charters hit an all-time record, including licenses for John Deere, Volkswagen, and Nordstrom's department store. Even without building branches, these companies can offer many of the services once reserved for financial institutions.
- **Payment and Collection.** In the United States alone, 29 billion bills are sent out each year, costing companies about 90 cents each plus the postage paid by the payer—pure transaction costs. The push is on to shift customers to on-line bill presentment and payment, which reduces the cost by up to 40%. On-line billing also generates important data for the ISC, making it possible to customize financing options and create new kinds of payments. Targeted advertising attached to on-line bills will generate new revenue and replace wasted bulk mail. Alliances of leading credit card companies working in conjunction with software and network providers such as Microsoft and America Online have been working aggressively to make on-line billing succeed quickly. Paymybills.com, for example, is funded by American Express, Citigroup, and E*Trade, among others.
- **Customer Service.** Customers are taking over customer service. After all, they know best what they want and need, and if given the right tools, they even prefer to do their own order entry, diagnose problems, and customize products and services. In the airline industry, which has never been known for high levels of service, mobile computers that are already familiar at rental car return lots are moving into the airport terminals, where delays have increased to the breaking point. Since 1996, Alaska Airlines has offered check-in kiosks, and is now experimenting with smart tags which can be attached to the passenger's key chain and read automatically as the traveler approaches the kiosk. No-frills carriers such as Southwest Airlines have been particularly aggressive in encouraging passengers to serve as their own travel agents,

in part by offering lower fares and bonus frequent-flier points to customers who book directly (and pay immediately) through its Website.

The Privacy Problem

Consumers are essential partners in the creation of a complete ISC. Unfortunately, even in the early stages of metamorphosis they have demonstrated considerable resistance, concerned about the loss of privacy that would likely follow from a complete information flow for the products and services they buy. Privacy is a serious problem, the modern equivalent of air pollution during the Industrial Revolution. In the interests of space I describe here only the broad outline of both the problem and its possible solution. It is worth underscoring, however, that without a solution to the privacy problem, there will be no ISC, and therefore no new value from its use.

First, the problem: As consumers ourselves, we can understand fears of data misuse. Companies have been developing information systems for over 25 years, and primitive cross-company initiatives including EDI (Electronic Data Interchange) transferred data long before the Internet became a commercial network. But consumers have been almost uniformly excluded from these developments. It is in this final link, the closing of the loop that makes up an ISC, that the technology of the Information Revolution will play its biggest and most dramatic role. As disposable computing makes it possible to collect more and more consumer data, we can and must find ways to ease privacy concerns.

Consumers have been given few reasons to feel optimistic about these developments. Though the ISC promises improvements in cost, service, quality, and selection, most consumers' only experience with large databases has been with their abuse—in the pathetically low quality of most credit reporting data, or errors appearing on credit card, utility, and other computerized bills. In many countries, lingering fears of governments spying on their citizens are easily fanned into flames. More recently, Internet users (over 100 million in the United States alone) have been distressed to find retailers keeping track of their movements through the World Wide Web and selling these data, leading to a deluge of unwanted advertising and promotional messages.

The privacy problem is made worse by poor public education. Few companies or the trade associations who represent them have explained to consumers in plain English the actual extent of their data collection, nor has anyone helped consumers see the positive benefits that will come with more complete data collection. In the absence of real information the privacy debate has been largely dominated by myth and superstition.

The stakes are high. Already, there are calls for legislation to restrict the capture and use of private data. If done correctly, such regulations can help speed the development of ISCs. If industries resist, or fail to form alliances with their customers, what will more likely pass are restrictive regulations that harm everyone. Earlier data privacy struggles, including the passage in the United States of the Fair Credit Reporting Act, the Truth in Lending Act, and, in the European Union, broad interpretations of the European Convention on Human Rights, have much to teach us, if we will only learn from their example.

The solution begins with better public awareness of the true aims and benefits of the ISC. Beyond that, trade groups and other industry associations must work to establish

rules for self-policing that address legitimate consumer concerns about inappropriate uses of transaction data, as well as technologies to allow them to opt out of the ISC at any time and for any reason. These will be the easy fixes. The hard problem will be resolving the link between privacy and propriety; that is, deciding who owns the rights to use consumer information collected during the transaction. This is an aspect of the privacy debate that, so far, no one wants to talk about, but the subject cannot be avoided much longer.

Consumers and the companies they deal with need access to as much relevant information as possible. The more of it that takes a digital form, the lower everyone's transaction costs will be. Once the transaction is complete, however, companies will have to acknowledge (if only because of laws that say they do) that consumers have some rights to the data—at the very least the right to say how the information will be used after their business is complete. Companies who want to use that data in ways that generate new revenue will have to share that income with consumers, either in payment or in kind.

Making individual deals with millions of consumers might sound like an impossible, or at least very expensive, solution. Actually, it is already in place and working in a variety of exchanges, some that you participate in yourself. Consider what happens when you hand over your preferred shopper card to the cashier of a grocery store. The store collects a complete record of your purchase, which can be consolidated with other purchases you have made, correlated with where you live, and analyzed along with the data of other shoppers. This data helps grocers and their suppliers maintain better inventory levels, identify failing products or new product opportunities, and correct bad guesses about promotional prices and coupons.

In exchange for your data, the store provides special discounts available only to its preferred shoppers. Look at the bottom of your last few grocery receipts, and you will probably find that in exchange for your data, the store gave you between 5 and 10% off the total purchase price of your order. That's a strong incentive for consumers to hand over all that data—and all the rights to make use of it—every time they shop.

Grocery stores and their supplier partners understand that to build an ISC they must share with consumers the new value that comes from connecting up the last link in the supply chain. In the case of grocery stores, that data is worth at least 5 to 10% of the stores' gross earnings—that is the amount, in any case, that you have settled for so far. There were no lawyers, no contracts, no negotiations, and, for the most part, no regulations. Despite involving millions of consumers, the solution incurred minimal transaction costs.

This is not to suggest that consumer data will come that easily in your industry. As we understand more about the uses and true value of our information assets, the formula for allocating it among participants in the supply chain will be subject to regular renegotiation. But assigning and divvying up the value of new information being collected as industries proceed through metamorphosis is a crucial step, not only to avoid conflict over privacy and ownership, but to create incentives for cooperation in the construction of ISCs.

No industry has yet emerged from industrial metamorphosis with a complete information supply chain connecting raw materials all the way to the consumer and back again. Still, from the progress made in several businesses, we can say a few things about how you can best prepare for it:

- It costs far less to build an ISC than to build a vertically integrated company. Computing power is cheap and getting cheaper all the time. The company with the most leverage in today's supply chain will not necessarily emerge first from the transformation and, as we saw in the Industrial Revolution, first doesn't always mean best. Minor players with significant information assets, or even new entrants with powerful software, may capture the lion's share of total profits. Share new value with consumers, and you create powerful allies—powerful enough to tip the balance.
- You cannot build an information supply chain if your own link is weak or broken. Your internal information flow must be complete before you can connect with your trading partners and generate new value from the sum of the parts. Proceed with haste to implement core systems including procurement, ERP, and customer relationship management, and build them on an infrastructure that will maximize the potential for data exchange. In 2001, the Internet served as the conduit for close to \$1 trillion in orders, most of them between businesses. The same year, companies spent more than \$2 billion just to install procurement software.
- Your industry's ISC will not be built solely by a startup company or by an existing participant in the supply chain. Today's participants have the information assets, but startups know better how to deploy them. Every metamorphosis success story involves both kinds of organizations, or what Charles Schwab CEO David Pottruck calls a "clicks-and-mortar" approach.

These are just some of the elements of the strategic response you must design and execute as your industry proceeds through metamorphosis; the details will follow in the remainder of the book. The biggest challenge, however, will be to move fast enough to succeed at all three stages at once, regardless of how quickly they arrive or how much damage they do to current operations.

The only way to do that is to invest simultaneously at the efficiency, exchange, and emergence stages, and to manage your investments together. For that, you will need some new ideas, as well as new ways to implement them: new kinds of investments, new organizational and technical infrastructure, and new partners. In short, a new approach to strategy.

The traditional tools of strategic planning, as we are about to see, won't take you very far in the development of a response to metamorphosis in your industry. But have no fear. While the Information Revolution calls for radical changes in how you plan, most companies already have the skills they need. The hard part will be to find and exploit them—the subject of the next section.