The Three Phases of Value Capture
In 1878, Thomas Edison placed a metal cylinder on a threaded axle, attached a mouthpiece and diaphragm to a stylus, and, while rotating the device, spoke the words “Mary had a little lamb” into the contraption. Translated into waves and engraved on the cylinder, the sound of his voice was returned to him moments later. That sound gave birth to a vast and influential recording industry, from which Edison — an entrepreneur as well as an inventor — profited greatly. The “Wizard of Menlo Park” had created value and captured a large portion of that value for his company.

In 1999, Shawn Fanning, a 19-year-old computer student, created a software program that allowed individual computers to search for and download music from myriad other computers around the world. Almost immediately, Napster, as he called his Internet-based “peer-to-peer” computing program, began to transform the recording industry: Consumers now could record digitized tunes on their own hard drives, entirely free of any type of royalty or other charge.

Shawn Fanning, like Edison, had created untold value for the public; in a little more than a year, Napster attracted 38 million users worldwide, including more than 8 percent of home Internet users in the United States. Yet unlike Edison, he could find no way to capture any of that value for his company. Indeed, by breaching the major record labels’ previously sturdy distribution oligopoly, Napster made it increasingly difficult for any single player in the recording industry — whether composer, performer, producer, distributor, or retailer — to capture the value Mr. Fanning unleashed.

Similar stories have played out across the short history of the New Economy. Netscape’s version of the Mosaic browser shaped and popularized the World Wide Web;
but, unable to directly “monetize” its invention, Netscape sought protection in a merger with America Online Inc. Companies ranging from the venerable New York Times Company to the startup TheStreet.com posted their content across the Web, yet the payback from either paid subscriptions or advertising has been at best limited. Indeed, it’s become clear that for every Dell, Schwab, or Cisco, there are dozens of companies that have been unable to capitalize on their innovations. The evidence can be found in the Nasdaq listings and the drumbeat of dot-com disaster stories in business press. They illustrate the greatest challenge of the New Economy: how to bridge the widening gap between value creation and value capture.

Many companies today are stuck inside that gap. They have seen innovation galvanizing customer interest and propelling revenue growth across an industry — simple measures of value creation. So they have developed Web sites on which to sell their goods and services, built infrastructures for sales and service, and spent millions on marketing, all on the assumption that they could grab some of that customer interest and revenue growth to lift their own profitability — the only valid gauge of value capture. Yet profits have hardly ever materialized.

Why? Because many of these companies did not shift their focus from value creation (revenues) to value capture (profits) soon enough, and instead followed the flawed logic that scale, scope, and increasing returns on incremental investments govern their business. Compare the e-tailers that have chased “eyeballs” into bankruptcy with established retailers like Wal-Mart Stores Inc. and Home Depot Inc. Realizing that retailing does not enjoy increasing returns on incremental investments, they correctly fine-tuned their business models to generate profits after reaching a minimum efficient scale.

Wal-Mart and Home Depot are not alone. All types of companies can still capture value from their own and others’ innovations by finding and exploiting new “choke points” — places on a value chain where potential profits reside — that will create competitive advantage.

The concept of choke points proves especially valuable when used with a three-phase sequence that defines how the marketplace absorbs innovations. The sequence starts when firms prove the feasibility and value of an innovation, moves to defining the rules of the game, and concludes with maximizing the value created by the innovation. CEOs who remain alert for choke points during all phases are well positioned to reap value for shareholders.

Bridging the Value Gap

The value creation/value capture dichotomy is centuries old. Before the Industrial Revolution, craftsmen and financiers such as Leonardo da Vinci and the Rothschilds could capture the value of their own handiwork and inventiveness. Industrialization complicated the ability of inventors to gain personally from their innovations. Henry Ford may have created the modern automotive industry through his system of factory organization, but the Ford Motor Company depended on earlier tinkerers who perfected the internal combustion engine. Modern telephony originated with the work of Samuel F.B. Morse, Alexander Graham Bell, and others, but a profitable business model did not emerge until Theodore N. Vail, backed by J.P. Morgan’s money, consolidated the fragmented U.S. telephone industry into the Bell System.

That history reveals the dirty little secret of innovation: Its potential remains dormant unless it is coupled with a business system that unleashes its disruptive energy — either by unsettling an existing industry or by
separate innovations in the DC-3: the variable-pitch propeller, retractable landing gear, a type of lightweight molded unibody construction called monocoque, radial air-cooled engines, and wing flaps.

The ability to sense the revolutionary potential of a technology innovation is central to a firm’s prosperity — indeed, to its very survival. That ability, in turn, depends on how a company defines its industry and its place within it. Historically, large companies, and even whole industries, have been well positioned to absorb or adapt to potentially revolutionary technology or business-model innovations. Consider the example of Westinghouse Electric Company, General Electric Company, and the AT&T Corporation, which together established Radio Corporation of America in 1919.

They initially believed they would profit from the sale of radio sets. That view changed once the federal government sanctioned commercial broadcasting. The partners’ control of the land lines and technologies needed to link stations into a national network enabled RCA to launch the National Broadcasting Company, and to replace the manufacturing-based business model with a far more profitable one premised on advertising sales.

The trajectories of the recording and radio industries show the workings of the three-phase sequence that defines how the marketplace absorbs innovations. Here is how the phases unfold:

**Phase I: Proving the Feasibility and Value of Innovation.** In this earliest period, an innovation enters the market, is tested, and is embraced by early adopters and other risk-taking innovators. Applications during this phase are scattered and unfocused. Industry value chains and commercialization methods have yet to form, and intellectual property (IP) law needs time to catch up. Any profits to be made are in the future. When GE developed plastic compounds that could be made into lighter-weight auto doors and bumpers, the industry’s molding machines were not big enough to make such components. So GE had to work with downstream suppliers to produce the infrastructure that would allow the four major players — resin producers, “Tier 2” component makers, auto manufacturers, and car buyers — to realize and share the value of the initial invention.

Frequently, several evolutionary innovations must come together before a new business system develops and an industry is revolutionized. The Wright Brothers’ 1903 flight led to a military market for aircraft by World War I. But as Peter Senge notes in *The Fifth Discipline*, commercial air travel didn’t become viable until 32 years after the first flight, when McDonnell Douglas drew together five creating a new one — and channels that energy into a value-capturing enterprise.

A business system is the mechanism for value capture. On occasion, a technology innovation can have the elements of the business system built into it. Edison’s phonograph gave people music in their homes without the expense and limitations of the piano. It created the recording industry; it was revolutionary. Other innovations that at first appear revolutionary do not actually stimulate a new business system. Compact discs, early predictions to the contrary, didn’t scramble the music business Edison had created. CDs fit well into the existing business system, lowering production costs without altering the distribution infrastructure already in place for vinyl records. Such innovations are merely evolutionary.

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and revise their value proposition. Innovators know they are creating value when other players in the nascent value chain begin to see demand, support the innovation, and collect real — if meager — revenues.

In this period, where the new innovation is not yet economically disruptive, laws and regulations intended to create a stable environment don’t exist or are ignored, and the innovators tend to share freely with one another. In the early days of the PC industry, an unknown hobbyist stole and distributed to his friends the BASIC computer language that young Bill Gates and Paul Allen had written at their fledgling company, then known as Micro-Soft. The hobbyists, fans of the Altair, the first proto-PC, were annoyed that Messrs. Gates and Allen were trying to sell this vital enabling device. But if innovations are to live beyond this stage, somebody has to have the vision to imagine an end game (as Gates and Allen did) and the discipline to fashion a business system innovative enough to grab a winner’s share of the profits.

**Phase II: Defining the Rules of the Game.** In the next stage, firms come together and break apart. In the process, they work out where, exactly, value will be created and realized along the value chain, where choke points might be found, and what mechanisms would let them trap profits in those choke points. The nature of choke points themselves is changing. In the past, many choke points — control of a patent, or customer access, for example — were premised on information asymmetries that, in a manufacturing-era economy, could give a firm competitive advantage for decades. Today, in an economy suffused with information, those asymmetries and related choke points still arise, but may last for just a few years, perhaps only months.

The desire for a return and the need to protect intellectual property initiate this stage of planting and cultivation. Alliances spring up to nurture mutual interests and erect barriers to market entry. The triple partnership that created RCA was a Phase II hallmark, as was the consolidation of small auto manufacturers into the General Motors Corporation in the early 1900s. Phase II is also marked by growing clarity regarding standardization, IP law, and public policy. (Broadcasters forged an IP framework when they negotiated royalty deals with musicians’ unions, enabling the fledgling radio industry to flourish alongside the existing recording industry.)

As technology selection shrinks the ranks of competitors and their platforms, it clears the field for sharper competition among the survivors. They must balance the need to grow the overall industry with the imperative to secure their own position in it. Striking the right balance can be tricky. Should a company aim for high volume or high price realization? To decide, a firm must have a deep grasp of supply and demand — not easy in a still-forming industry. Cash pressures or, more likely, shortsightedness has caused companies to do deals that give away too much value. IBM bet that the largest share of value capture in the PC industry would accrue to the branded integrator of hardware and software components. In ceding the operating system rights to Microsoft, IBM lost its bet and helped turn a supplier into one of the world’s largest companies by market capitalization.

In Phase II (and even as early as Phase I), a company must develop a long view about how an industry might evolve, and what the new rules of that industry will be. Although it’s difficult to do conventional strategic plan-
ning in the face of such acute uncertainty, executives should keep reminding themselves that there will be operating principles and procedures that will determine who makes money and how. By focusing on building a dynamic, adaptable strategic plan, companies can better navigate — and even shape — the emerging rules.

This is the stage at which canny players are able to position themselves to occupy the choke points where they can harvest the ripest value-capture opportunities. These choke points in the value chain are defined by the sets of operating principles and procedures that will apply to the mature industry. The traditional choke points include: ownership of an essential pipeline, control of the customer interface, control of advantaged infrastructure, and control of supporting services. These and other choke points create five types of barriers to market entry:

- **Innovation-based.** Whoever has the neatest thing today wins. The rules of the game frequently revolve around product performance — does it work and what does it do? The value of new technologies is high, but switching barriers are low: In some innovation-based industries, frequent changes in technology depress entry barriers and let new entrants leapfrog established market leaders. For example, over the past two decades, customers have granted leadership in the disk drive industry to IBM, Connor, and Seagate, among others. In other industries, the leader is able to maintain its position over time, but does so only by innovating constantly to offer products that lead the market in performance. The microprocessor industry, which Intel leads, is one such example.

- **Value-added-based.** Whoever can deliver a “can’t-do-without” system wins. Speed to market with a good, but not necessarily perfect, product is critical. Here, new technologies are valuable, but network effects can create substantial switching barriers as the innovators swiftly grab dominant market share. The switching barriers give winners a strong position because customers are reluctant to migrate to competitors (even if they offer attractive features or a lower price). Microsoft Word added enough value to the office PC that it became the word processing standard, and, thanks to Microsoft’s broad distribution power and leadership, became hard to dislodge.

- **Alignment-based.** Whoever can deliver the best price-service combination for a well-defined target market wins. Perfect does matter here. Winners align their total business system against the target market’s needs, get the offering to the highest possible quality in test markets, then roll it out. For example, Southwest Airlines Company built a business system that serves — and dominates — the market for short-haul, budget-conscious travelers.

- **Infrastructure-based.** Whoever owns the tangible asset or distribution network wins. An airline’s landing slots, a cable television company’s head ends and wires, and an oil company’s retail gasoline outlets can make switching barriers almost insurmountable. As a result, innovation is usually less of a threat than is regulation — although relying on regulatory protections can induce harmful laziness.

- **Cost-based.** When all of the above strategies fail, then whoever can maintain the lowest prices for customers wins. Here again, new technologies can give a player a valuable efficiency edge. But for the customer, the switching barriers are the lowest. This is the race so many commodity chemicals companies are running, seemingly without end.

In Phase II, industry value chains may cluster around one type of choke point, only to crumble and coalesce around another as new technologies, alliances, and customer expectations rapidly alter the operating conventions. So it’s essential for a company to see clearly how the barriers and rules are developing. Thus informed, executives can build real value-capture mechanisms — and know when to change them when an innovation threatens to disrupt the system.

Finally, one of the biggest challenges for leaders in Phase II is walking the fine line between actions that expand the emerging industry and those that protect established or future positions. Lean too far toward the former and you risk value loss; too far toward the latter and you stifle development of the nascent industry.

**Phase III: Value Maximization.** In the last stage, the survivors of the harsh competition remain while the less hardy players have left (or have been carried off) the field. The technology kinks have been worked out and the industry structure is somewhat stable. Value propositions are in place, and business and economic models have been tested. Phase III is entirely focused on getting the most value for the enterprise.

With standards established, this is the period when true value capture, based on the actions taken in Phase II, has traditionally occurred. But it’s not a period of rest. In the personal computer sphere, the past 20 years have seen wave after wave of Phase III value-capture upheavals. Early on, IBM deployed its open architecture strategy to overcome Apple Computer Inc. for PC leadership. However, the Compaq Computer Corporation soon capitalized on operating speed to win share from IBM and claim the industry crown — for a while. Then the Dell Computer
Corporation upended the market with an innovative business system based on deep knowledge of each customer’s needs and direct delivery of customized PCs.

Phase III never really ends. There is no Phase IV. Winners must continue innovating, responding to shifting customer needs, and, thus, growing their businesses — and occasionally recognizing when it’s time to circle back to Phase II again!

**Value Constellations**

The drive to innovate is even more important in the New Economy, where the rapid sharing of information forces players to adapt constantly. In addition, ruptures in traditional boundaries in the value chains are requiring companies to rethink how they go to market, what they need to own, and how they deal with suppliers and customers.

The speed of technological change has had great impact on the three-phase sequence from value creation to value capture. Innovations such as greater microprocessing power, Internet protocol networking, hyperstorage, and genomics are transforming value chains in almost every industry. The reason: Many of these value chains, and the very structure of industry in the old economy, were held together by information. Today, these technology innovations are rendering information abundant, ubiquitous, fast, and free.

The availability of information is perhaps the single most significant contributor to corporate change. As Nobel laureate economist Ronald Coase concluded almost 70 years ago, the boundaries of the firm are defined by its transaction costs. “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 on the open market,” Mr. Coase, now a professor emeritus at the University of Chicago Law School, wrote. In the past, those costs were determined largely by information. Who could supply the needed goods? At what quality? For what price? Were better prices available? Better quality? Could delivery be guaranteed more quickly?

Hard to acquire and imperfect, information contributed to high transaction costs, which in turn led firms in many industries to vertically integrate. It cost GM far less to source its own parts internally than to search the globe for suppliers. By keeping information inside its boundaries, an integrated company could create value in one division (e.g., drug discovery) and capture it in another (e.g., drug sales and marketing).

Today, as the costs of sharing and using information fall, companies and their industries have an impetus to “de-integrate,” according to the Coase theory. Think of GM’s spin-off of its parts division, now the Delphi Automotive Systems Corporation. The trend is accelerating as the Internet and other services give companies access to even more information. The impact: The threshold of cost set by the availability of information can no longer define the firm’s or the industry’s boundaries.

The result is industry value chains that are undergoing almost continuous evolution. The morphing value chain — you might call its new form a value web, an extended enterprise, or (our favorite) a value constellation — challenges firms that thrived with an integrated approach. The best value-capture mechanisms may now lie outside the individual firm’s boundaries. Yet the value created by a firm may be necessary to the viability of the entire constellation. The nature and definition of the firm are also undergoing profound changes, thanks to the ubiquity of information. The firm is shifting from a self-contained value-creation and -capture apparatus into one part of an interdependent community whose members
continually negotiate responsibility for value creation and the right to value capture.

This shift breaks decisively with the old economy, in which information scarcity encouraged value capture through knowledge hoarding. Information asymmetries still exist, of course; a company can create a choke point with advantaged pricing and customer information, for example. But in an information-suffused environment, asymmetries alone are more fleeting, less reliable sources of value capture than they were previously. Winners will have to transform information into value-creating knowledge and aggressively use this knowledge to capture additional profit. Knowledge asymmetries may be the best choke point in the New Economy, and when used to create further new asymmetries, also the most enduring.

That means the game of value capture is no longer won by finding and protecting a defensible position: It’s won by developing a business system that’s quicker and better at using information, and adapting the system as the industry evolves. This change can be felt throughout the innovation–adoption cycle. Moreover, it implies that value capture can be planned and executed in all three stages, and not left for the last phase.

Consider these shifts:

*Phase I now revolves around business definition.* Companies have to figure out much earlier than in the past what end games they might pursue. What are their likely value propositions? What frameworks and scenarios will they use to envision the nascent industry’s growth path? With early business-system thinking, a company can make smart choices about the technologies, product mixes, and markets to pursue.

New tools, such as real-options analysis and corporate venturing systems, help innovators inject business-system thinking into new ideas and decide how to take them forward. A well-stocked tool kit is vital because, even in Phase I, innovators should be thinking hard about how their industry will evolve. What might drive conflicting scenarios in Phase II and Phase III — where are the tar pits, where are the gold mines? Having defined the potential scenarios, innovators can plot their route through Phases II and III, watching for milestones and making course corrections. Having the right tools allows innovators to quickly understand and assimilate new information along the way.

*In Phase II, executives need the flexibility to discover many value-capture choke points — and the ability to coalesce an industry around these points as they shift.* Although information technology is creating new value-capture opportunities (e.g., clearinghouses and exchanges, ownership of technology backbones), these choke points are no longer necessarily natural, or enduring. Even a winning bet on the best choke point can prove fleeting. Yahoo bet on control of the customer interface, and soared to a market cap that at one time exceeded that of GM and Ford combined. But as investors have realized that Yahoo’s Web traffic did not translate into ad and transaction revenues, its share price has dropped by more than two-thirds. (Tacking in another direction, Yahoo could migrate its profit source from ad sales to other streams such as referrals to e-tailers and financial services providers.)

What Phase II really requires is a new focus on alliance development and management: playing the role of “constellation manager” can help a firm capture value even as its industry undergoes a roiling evolution. Moreover, Phase II requires the ability to move smoothly from one value-capture mechanism to the next, constantly adapting and evolving the business. The more the firm is able to move the ownership of non-fungible fixed assets out among its constellation, the easier it becomes for the firm to adapt and change quickly. Also, the better and more far-reaching the constellation, the greater the ability of the firm to quickly sense, identify, and respond to key changes in its environment.

Dell, to cite one prominent example, uses its sourcing systems and customer knowledge to manage networks of suppliers in order to fill customized orders. Dell’s network-intensive and resource-efficient model is also helping it change its value-capture mechanisms. As the growth of profits from selling PCs slows, Dell is migrating to other sources of revenue and profit, such as consulting services. Dell’s continued success will depend on how quickly it drives this transformation, and whether
the change happens fast enough to offset the slower growth in earnings from PC sales.

Players in technology-intensive industries manage their constellations by gathering technologies around open platforms. Pharmaceutical companies, for example, have realized they cannot profit from new technologies without external alliances that give them access to those technologies — technology is changing too fast to develop most things in-house. New technologies such as “wet science” capabilities, computer tools, bioinformatics, assay chips, combinatorial chemistry libraries, and animal models are largely sourced from outside the pharmaceutical company. Eli Lilly and Company, for one, has allied with a significant number of technology partners to get the needed tools. If an innovation extends its current knowledge and capabilities, Lilly can then decide to develop a new business around it. In other words, the multiple alliances are an early-sensing network, helping Lilly decide which businesses to pursue and giving it an advantage during the Phase II stage of development.

Finally, companies that manage successfully through Phase II will earn the opportunity to play in Phase III of their industry. Moving to the next phase requires a new mind-set: new tools, a more rapid planning process, and the ability to keep the organization aligned with the strategic direction.

Phase III is now about continuous business model innovation, centered on customer needs. In an information-scarce economy, Phase III consisted largely of execution — keeping costs low and efficiencies high, exploiting pricing opportunities, and extending offerings to new market segments. But today, a company must continue innovating, grabbing any slight advantage created by temporary knowledge asymmetries. Much of the innovation will be in business systems, as companies use their knowledge of customer needs to develop portfolios of businesses, each with different risk-to-reward ratios.

Filling customer needs requires a company to bring its customers inside the firm, making their input part of the knowledge enriching a value chain. With the boundaries of the firm now porous, customers no longer sit outside — or at the end of — a value chain, passively waiting to receive goods and services. “The market,” C.K. Prahalad and Venkatram Ramaswamy wrote last year in the *Harvard Business Review*, “has become a forum in which consumers play an active role in creating and competing for value.” Customers are “a new source of competence for the corporation.”

RealNetworks Inc., for example, created a market for
“streaming media” on the Web by giving away its media player, galvanizing developers to create applications based on its streaming format. Its original business model sought to capture value through the sale of streaming media servers to Webcasters who wanted to reach the consumers using those free players. Although some 85 percent of multimedia content on the Internet today is streamed in RealNetworks’ format, server sales have not proved a robust source of income; the company earned $7 million on $131 million in sales in 1999. RealNetworks’ follow-up strategy has been to create other products and services — some free, others for a price — that center not on streaming per se, but on the customers and end-users who create and consume streamed content.

The Endless Victory

The race from value creation to value capture requires not just vision, but intense concentration and commitment. Even Thomas Edison based his phonograph on concepts that had been around for decades — innovations whose creators are now lost to time, even as Edison’s machines and name endure.

Vision and stamina are now mere points of entry in the New Economy’s value-capture marathon. Today, executives also need a politician’s ability to build coalitions, a diplomat’s sense of when a partial victory is a complete win, and a general’s understanding of maneuver warfare, in battles that will be won by brains as well as attrition.

As you manage innovation through its three phases, for short-term gain and long-term success, remember four lessons above all:

1. Rigorously and explicitly think through the evolution of the value creation/value capture trade-off, developing strategies for securing gains even in the earliest stages of conception.

2. Exploit a continuous chain of often fleeting opportunities driven by knowledge asymmetries. Use proprietary knowledge to generate profits and the next generation of proprietary knowledge as quickly as possible.

3. Do strategic planning for your entire constellation of partners, not just for your individual company. And remember that strategic planning is an ongoing process — not an annual event focused on the budget cycle.

4. Explicitly include the customer — and the customer’s economics — in your constellation planning.

After a year of controversy and expensive lawsuits, these are the conclusions reached by Shawn Fanning — now a battle-scarred 20-year-old — and his backers at Napster. In late October 2000, Napster decided to work with the record industry, not against it, selling a stake to the German media giant Bertelsmann AG. Napster’s founders said they would begin to charge for access to their peer-to-peer distribution system. The recording industry, in turn, acknowledged that it couldn’t, wouldn’t, and shouldn’t battle the inevitability of change.

“This is a call for the industry to wake up,” Bertelsmann chairman and CEO Thomas Middelhoff said, as he announced his agreement with Napster. He was smiling broadly as he spoke.

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