

Chapter

4

Making the Case for IT¹

Footnote 1

Footnote 2

Footnote 3

Figure 4.1

We continue pumping \$2 trillion annually into information technology to pursue competitive advantage and spur productivity. But extracting strategic value and productivity from IT has become increasingly challenging.²

In spring 2003, Nicholas Carr published a controversial article entitled, “IT Doesn’t Matter.”³ Following on the heels of the dot-com meltdown and subsequent global economic recession, the article quickly became a best seller as business executives challenged their chief information officers (CIOs) to explain—and sometimes defend—their IT budgets and requests for support of new IT investments.

Carr’s argument, see Figure 4.1, is built upon the premise that, in the past, IT applications were developed in-house with each application representing millions of dollars worth of investment and years of effort. Given the investment and time required, economists considered these IT applications a “scarce resource”—something that your firm could do or had access to which others did not. When targeted toward strategic differentiation, *proprietary* IT applications could deliver *proprietary* advantage to a firm.

Today, Carr argued, many of the IT applications in use within firms are widely available from vendors and service providers. Others are built using development tools that dramatically decrease development cost and effort and, as a result, can be easily copied. Since strategic positioning defines what makes a company unique, Carr believed that IT no longer conferred proprietary advantage. Instead, he argued, IT should instead be considered a commodity—part of the infrastructure upon which a firm does business.

Carr’s second premise builds upon the first. While proprietary technologies are more valuable when they are owned and exploited by a single company, infrastructure is more valuable when shared. As hardware, and increasingly even software, become part of the shared infrastructure for doing business, a greater percentage of IT investment dollars is used to build infrastructure. While Carr admits that an infrastructure owner

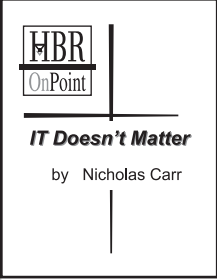
¹ This chapter is adapted from papers and materials from Professor Applegate’s *Building Businesses in Turbulent Times* course. The correct citation is L. M. Applegate, *Building Businesses in Turbulent Times* (Boston: Harvard Business School, 2004), available on request from the author.

² “Wringing the Real Value from IT,” *Harvard Business Review OnPoint* (No.

³ N. Carr, “IT Doesn’t Matter,” *Harvard Business Review*, May 2003.

Author: Pl. supply complete reference.

FIGURE 4.1
Key Premises
of Nicholas
Carr's
Argument



Carr's Key Premises

- IT is ubiquitous not scarce.
- IT is infrastructure not proprietary.
- The Internet is accelerating the rate of commoditization of new IT applications.

can gain proprietary advantage in the early phases of an infrastructure build-out when access is limited, the mistake most executives make, he says, is that they think the advantage continues indefinitely and are not prepared when rapid commoditization causes prices to drop before the infrastructure investment delivers the expected returns. Alternatively, executives may sink money into risky investments in infrastructure that never gain widespread acceptance.

Carr's third premise is that the widespread adoption of Internet-based technology standards—when coupled with the dramatic increase in network speed and capacity and the tendency to develop applications that cross firm boundaries—has provided the perfect channel for quickly disseminating IT applications throughout an industry. As a result, new value-creating IT applications are quickly commoditized. In addition, while modular IT architectures enable rapid customization, the ease of entry and lower switching costs mean that even these customized applications quickly become commoditized. Rapid commoditization means that the window of opportunity for creating value from IT often closes before proprietary advantages can be fully exploited.

Given the above premises, Carr concludes that executives should (1) spend as little as possible on IT; (2) concentrate IT investments on driving cost savings; (3) follow rather than lead when adopting new IT, allowing others to bear the risk and cost of testing new technologies; and (4) concentrate on managing risk, rather than searching for IT opportunities.

When Carr's article hit the streets, the letters to the editor began pouring in. While some criticized Carr's entire article, thoughtful readers recognized that—while the title was designed to be provocative—the basic premises could not be totally dismissed. Many executives *are* spending too much on IT believing that the technology itself conveys proprietary advantage. Many firms have been investing to build new infrastructure that duplicates what could have been bought much more cheaply. And, the increased pace of innovation and speed with which commoditization occurs has caused the windows of opportunity within which a new technology innovation must be exploited to shrink. John Seely Brown, former chief scientist at Xerox Parc, and John Hagel, a management consultant, captured the mood of many letters.⁴

Footnote 4

⁴ See "Does IT Matter? An HBR Debate," *Harvard Business Review*, June 2003, p. 2.

Businesses have overestimated the strategic value of technology. They have significantly overspent on technology in the quest for business value. They need to manage large portions of their infrastructure more rigorously to reduce capital investment and operating expenses. As companies become more dependent on IT for their day-to-day operations, they must focus on potential vulnerabilities and more aggressively manage for reliability and security.

But Seely Brown and Hagel go on to argue that:

... such ideas are not inconsistent with the view that IT remains a profound catalyst for the creation of strategic differentiation ... IT may be ubiquitous but the insight required to harness its potential [is not] ... The gap between IT potential and business realization of that potential has not narrowed. Instead it has steadily widened over the past several decades. This gap creates enormous instability in the business world. Wherever there is so much potential for instability, there is also fertile ground for new strategies.

Vijay Gurbaxani, professor and director of the Center for Research on IT and Organization at the University of California at Irvine, agrees: “The scarce resource never was technology; it was always the set of managerial capabilities needed to create value with that technology.”⁵ Paul Strassman, executive advisor at NASA, goes further:⁶

Easy availability of information technology is what makes IT increasingly valuable ... I spent 40 years of my career implementing information technologies; for the first 30 years, that was a great pain. The technology was expensive, faulty, insecure, hard to manage, and unstable. I finally see the advent of an era in which low-cost ownership of information technologies is possible ... Carr’s logic is defective because his examples deal exclusively with capital intensive goods. Capital investments in machinery do indeed exhibit diminishing returns as markets saturate and the difference between marginal costs and marginal revenues disappears, but information goods are not subject to such effects.

Indeed, Carr’s arguments seem to be based on the traditional mainframe-base and client-server approach to building IT infrastructure. These approaches led to IT infrastructures that were costly to build, costly to maintain, and provided limited opportunity for rapid leverage to drive insight and innovation. Today’s flexible, open standard and ubiquitous IT infrastructures are designed to be shared and, as Carr has argued, actually become more valuable when shared. This new breed of IT infrastructure has dramatically increased the range of business building opportunities that can be pursued while also dramatically decreasing the cost and time required to launch new IT-enabled strategic initiatives. IBM executives call this new IT design and the business opportunities it opens up—Business On Demand. And, as will be seen later in this chapter, the shift to On Demand at IBM enabled executives to exploit the immediate cost savings and asset productivity that come from sharing a common infrastructure while also exploiting the dramatic increase in “strategic options” for pursuing opportunities that drive profitable growth and proprietary advantage. And, unlike securities

Footnote 5
Footnote 6

Au: Pl. use author last name and part title instead of op.cit. (or loc. cit.) which can be conforming for reader.

⁵ p. 14.

⁶ p. 7.

options, these IT options were exercised over and over to create what economists refer to as a “virtuous cycle” of innovation, productivity, and increasing returns.⁷

Footnote 7

Executives that fail to recognize the new economics of emerging On Demand IT infrastructures can quickly find themselves at a serious disadvantage. The design implications of an On Demand, shared, network IT infrastructure are discussed in more detail in Chapter 6. An executive familiar with the emerging On Demand IT architecture model explained their impact:⁸

Footnote 8

I would argue that the commoditization of technology is the very thing that enables innovation in what many industry leaders now call an “On Demand” world. An On Demand enterprise is one that leverages standards-based, componentized technology to support integrated and flexible business processes. In a world where customer needs and global market forces are more dynamic than ever, it is these component-based technologies and flexible business processes that enable organizations to sense and respond to new opportunities and threats and to turn on a dime to meet new challenges. While technological innovation continually provides us with more powerful and efficient tools that do become commoditized and ubiquitous, strategic innovation using the technology—how we put the hardware and software together to solve pressing business problems and create competitive advantage—is very much alive and well.

This chapter presents frameworks, approaches, and examples that executives can use to create a compelling business case for exploiting the power of IT to create value inside the firm and for customers, suppliers, and partners.

Building the Business Case for IT

It is little wonder that there is confusion over how to exploit IT to create business value. Most executives continue to view technology as a budgeted expense to be managed on a project-by-project basis within traditional budgeting cycles. This approach is a throwback to the mainframe era when IT infrastructure was composed of large stand-alone computers, housed within a single data center, and was tightly managed and controlled by a centralized group of IT professionals that were dedicated to keeping the technology running. Using this approach, decisions on IT infrastructure investments—for example, in mainframe computers, networks, and facilities—were made along with other capital budgeting requests and ongoing maintenance and operations were managed through the annual budgeting process.

Value-creating IT applications that were built to run on traditional mainframe infrastructures were funded as stand-alone projects. Each application performed a specific task and delivered well-specified benefits—usually involving cost savings that would come from increasing the efficiency of a structured, paper-intensive back-office process. Once deployed, the application became part of the operating environment and routine operations and maintenance costs were factored into the annual operating

⁷ D. Farrell, “The *Real* New Economy,” *Harvard Business Review*, October 2003; C. Shapiro and H. Varian, *Information Rules: A Strategic Guide to the New Economy* (Boston: Harvard Business School Press, 1998).

⁸ Author interview, July 2004.

budget. Since most applications could only be used for a single purpose and were tightly coupled to a highly structured task, the ability to reuse (or share) applications was limited.

Exceptions to this norm were widely publicized, which increased executive awareness of strategic IT systems that could transform an organization and an industry, generating significant proprietary advantage. For example, American Airlines legendary computer reservation system (SABRE) was built on its internal reservation system that was running in the company data centers. While the internal system had been built in the 1960s to lower the cost and improve the efficiency of the internal reservation process, insightful marketing executives soon recognized that a new front-end could be added to enable the airline's travel agent partners to book reservations directly. Given that the SABRE system was a fundamental component of the firm's business strategy to lock in travel agents, the system and strategy were tightly intertwined and evolved in tandem creating proprietary advantage. As will be seen later in this chapter, this ability to leverage an existing IT application that generated cost savings and efficiency as a platform to create a new strategic IT application is at the heart of the IT value proposition for today's open standards, networked IT infrastructures.

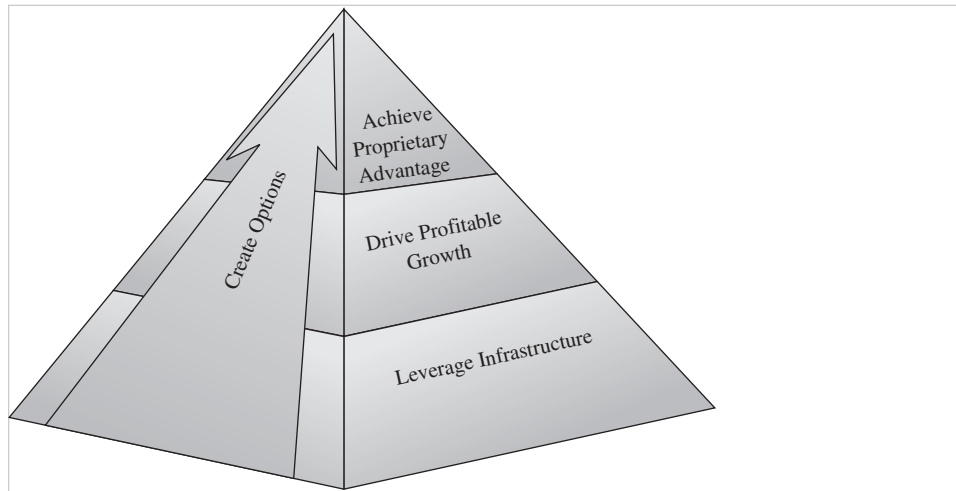
Over the years, IT has become ever more tightly intertwined with business operations and strategy. Indeed, by the early 1990s, forward-thinking executives had begun to search for new investment models. But the proliferation of incompatible computers, operating systems, and applications within and across organization boundaries impeded the adoption of investment models that recognized the dual role of IT to both create operating efficiencies while also driving business insight, innovation, and proprietary advantage.

The commercialization and rapid adoption of the Internet proved to be the "tipping point."⁹ Rapid penetration and adoption of Internet standards for packaging, storing, accessing, and sharing information in all of its forms—voice, video, data, and graphics—catalyzed convergence of multiple technology platforms and a commitment to develop and adopt common standards. By 2005, the stage was set for providing a shared infrastructure that would enable a dramatic decrease in the total cost of ownership and the speed with which new value-creating IT applications could be developed and deployed across an organization, an industry, and the world.

More importantly, building on these industry standards, new approaches to system design and development now enabled large, complex applications to be built from reusable modules linked together through shared "middleware" services and common interfaces. This approach dramatically increased the ability to reuse data, information, and applications and to share a common infrastructure, which further increased the flexibility and speed with which new value-creating IT-enabled business initiatives could be launched and globally deployed. Thus while infrastructure alone can't convey *sustainable* proprietary advantage, businesses that remain chained to a "legacy" of incompatible and inflexible *proprietary* infrastructures find themselves at a significant strategic disadvantage as they attempt to keep pace with increasingly shorter cycles of innovation, productivity, and returns.

⁹ C. Kim and R. Mauborgne, "Tipping Point Leadership," *Harvard Business Review*, April 2003 (HBR #3353).

FIGURE 4.2
IT Value
Framework



A Web services approach to building and deploying IT infrastructure and applications demands a very different approach to investment decision making. Given that large portions of an IT investment involve shared infrastructure that serves as a platform upon which multiple business building, value-creating applications can be deployed, IT can no longer be considered an expense that is managed on a project-by-project basis. Instead, we must think of business-building IT opportunities as a string of investments that must deliver value today and in the future. The value of these future uses can be thought of as the “options value” of IT, which will be discussed in more detail below.

The IT Value Framework, see Figure 4.2, identifies three categories of benefits that can be used to define the business case for IT: (1) investments in reusable, *value-enabling* infrastructure lower costs, improve asset efficiency and create strategic options for future growth; (2) investments in *value-creating* IT applications drive profitable growth through further cost reductions and, more importantly, through revenue generation; and (3) *value-sustaining* IT applications and infrastructure provide strategic differentiation and proprietary advantage that can be measured in terms of increased market share, improved brand value, and increased market capitalization.¹⁰ Table 4.1 provides examples of IT projects and metrics within each category that drive business value.

The IT Value Framework is discussed in more detail below.

Leveraging Infrastructure and Creating Options

IT infrastructure includes two key components—*IT operations* (e.g., data center, network and call centers) and *supporting enterprise processes* (e.g., procurement, enterprise resource planning, finance, and human resources). This infrastructure forms the foundation for delivering business value. When IT infrastructure is designed to optimize

¹⁰ This framework was first introduced in L. M. Applegate, “Making the Case for IT,” *Financial Times Mastering Information Management Series*, March 29, 1999.

Figure 4.2

Footnote 10

Table 4.1
Au: Pl.
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sentence.

TABLE 4.1 IT Investment Categories, Examples and Metrics

IT Investment Category	Examples of Projects and Initiatives	Sample Metrics
Achieve Proprietary Advantage	Differentiate products (e.g., information value-added; price). Enter new markets or increase market spend from existing customers. Launch new IT-enabled businesses. Increase barriers to entry or switching costs.	Increased market share. Increased brand value and awareness. Increased market capitalization.
Drive Profitable Growth	Improve new product development process to increase speed to market and effectiveness of new product launches. Improve customer facing processes to increase customer satisfaction, loyalty, lifetime value, and demand. Develop information and support for business analytics. Improve customer segmentation and personalization. Enhance the speed and improve performance of acquisition integration.	Increase IT contribution to net income. Increase IT contribution to revenues while holding constant or decreasing expenses. Shift expenses ratio from fixed to variable. Add new revenue streams from current customers.
Leverage Infrastructure	Leverage shared services, centers of excellence, offshoring, and outsourcing to ensure delivery of a best-in-class lean, yet flexible, infrastructure (includes data centers; networks; personal computers and devices; and supporting processes such as ERP, HR, Finance, etc.). Create IT development, deployment and operating processes that decrease the cost, time, and effort needed to launch value-creating and value-sustaining IT applications. Develop best-in-class security and risk management systems.	Decrease total cost of ownership of current infrastructure and operations. Improve asset productivity (\$ of sales generated by each \$ of infrastructure assets). Decrease IT infrastructure and operations costs as a percent of revenues. Decrease IT headcount costs as a percent of sales.
Create Options	Identify opportunities to decrease the time and cost of pursuing future value-enabling, value-creating, and value-sustaining opportunities.	Metrics depend on the type of option.

efficiency, speed to market, and flexibility, companies can drive down costs while also dramatically increasing IT asset productivity and future options value. Given that the IT infrastructure in most established companies is far from “best-in-class” in terms of being lean, yet flexible, significant value can be created through investments to modernize infrastructure.

Indeed, most large, established companies have a long way to go to achieve best-in-class status in their IT operating environment. Most companies assembled IT infrastructure in a piecemeal fashion over the past 20 to 30 years. New technologies were adopted as they became available with little consideration for how the different technologies might need to work together in the future. By the mid-1990s, this “legacy” IT infrastructure had become a hodgepodge of incompatible and inefficient technologies that were costly and difficult to manage and maintain. Given the state of IT infrastructure in most established firms, it is not surprising that massive investments have been required to simply keep critical systems up and running. In fact, most executives are shocked to learn that, at the height of the economic recession in 2002 when IT spending had already dropped precipitously, most established firms continued to spend over 50 percent of their capital budgets on IT equipment and projects. Globally, IT expenses in 2002 topped \$2 trillion.¹¹ Even more shocking was the fact that the cost of maintaining and managing IT infrastructure often represented 80 percent or more of the yearly IT budget, leaving few resources to be directed towards creating proprietary business value. Footnote 11

Given that investments in infrastructure are more valuable when shared, some firms are turning their infrastructure over to specialized shared services providers (for example, IBM Global Services, EDS, CSC) that can deliver best-in-class, asset efficient, yet flexible, global IT shared services. Recognizing that each outsourcing decision needed to also be paired with a local business process reengineering project, in 2002, IBM bought Price Waterhouse’s strategy and process reengineering consulting group to ensure that its outsourcing customers did not fall into the trap of saving money on technology while simultaneously driving up the cost of doing business and putting revenues at risk.

Other large, global firms prefer to build their own best-in-class shared services IT infrastructure, often *offshoring* IT shared services (for example, data centers, call centers, and even enterprise applications such as enterprise resource planning) in company locations in India, China, Brazil, or other emerging markets where they can take advantage of lower cost, yet highly skilled, labor markets. Savvy executives have learned to manage the business risks of implementing of these shared services initiatives by factoring in the cost and risk of reengineering intra- and inter-firm processes and the potential business disruptions that could occur.

But, no matter which approach is chosen to modernize IT infrastructure, executives are beginning to understand that they cannot sacrifice flexibility in the guest for efficiency. The “options value” that networked, flexible IT infrastructure can provide can no longer be ignored in companies where survival depends on being both lean and agile. See the text box, *Comparing Securities Options with IT Options*.

Analyzing the Options Value of Investments in IT Infrastructure

The series of cash flow curves presented in Figure 4.3 help frame how investments in value-enabling infrastructure create IT options that can deliver value today and in the future. As you review the curves, recall Nicholas Carr’s key arguments supporting his contention that “IT Doesn’t Matter.” Assume that a colleague has just dropped a copy Figure 4.3

¹¹ N. Carr, “IT Doesn’t Matter,” *Harvard Business Review*, May 2003.

Comparing Securities Options with IT Options

In financial terms, a *securities option* gives the owner the right (as distinct from the obligation) to buy a security at a fixed, predetermined price (the exercise price) on or before some fixed date (the maturity date). Important features of securities options that determine value include (1) the nature of future benefits (risky projects often generate the highest returns); and (2) the length of time you have to exercise the option (the longer the time frame the greater the value of the option).

Using this same logic, an *IT option* provides executives with the right (as distinct from the obligation) to pursue value-added IT-enabled business opportunities at a lower

cost, more quickly and with less inherent risk throughout the useful life of the technology. Features of an IT option that determine value include (1) the cumulative value from business opportunities that could potentially be pursued (the value of these benefits depends upon the number, type, and range of business opportunities); (2) the ability to pursue riskier opportunities where there is a higher potential return (as we will see below, the IT option “cuts off the downside risk for future investments”); and (3) the length of time for capturing value (keeping in mind that IT options can be exercised over and over again throughout the useful life of the technology).

Figure 4.3a

of the article on your desk and asked “What do you think of this?” Can you use the IT value framework and the discussion of cash flow curves below to frame your response? We will return to this question at the end of the chapter.

When faced with an investment decision, executives frequently perform a pro forma analysis of anticipated future revenues and expenses. The results of the analysis can be used to plot the expected cash flow curve for the future investment. Figure 4.3(a) represents an investment that executives of a medical device company are considering as they evaluate a business plan to launch a new Internet-enabled remote patient monitoring business. Patients with cardiac pacemakers would be able to place an external device over the pacemaker to collect data on cardiac rhythm, volume of blood pumped with each beat, and other clinical data. Data in the device could then be sent from the patient’s home by Internet to their physician, family and other interested health care providers, thus reducing the cost of monitoring the disease for the patient, family, and health care providers while also improving clinical outcomes. The cash flow curve suggests that executives will need to invest \$300 million over five years to develop the monitoring device, the associated IT infrastructure (customer and provider databases, networks, call centers) and remote monitoring applications, and then to launch it into the market and begin to generate revenues. The business is expected to begin generating positive cash flows in 5 years, to break even 2 years later, and to generate over \$2 billion in revenues by year 10. This scenario is represented by the solid line on Figure 4.3(a). Assuming that this is a risky new business, however, and that the device maker would be the first mover, the executives know that they must model, not just the most likely scenario but also alternative scenarios, which are represented by the dotted lines in Figure 4.3(a).

Figure 4.3b

Now let’s compare the cash flow curves of two investments—one by executives in MedCo A (as discussed above) and one by executives in MedCo B. See Figure 4.3(b). Assume that MedCo A executives plan to spend the first 2 years and \$150 million of investment in the remote monitoring business developing customer and provider databases, networks and call centers. During the next 18 months, the proprietary remote monitoring business applications and user interface will be built for an additional

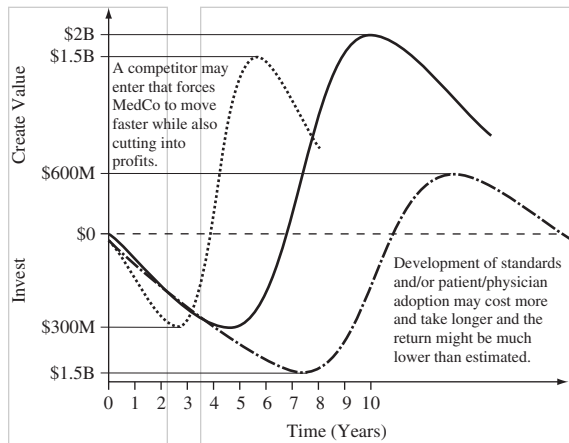


FIGURE 4.3(a) Comparing Three Cash Flow Scenarios for MedCo Patient Monitoring Investments

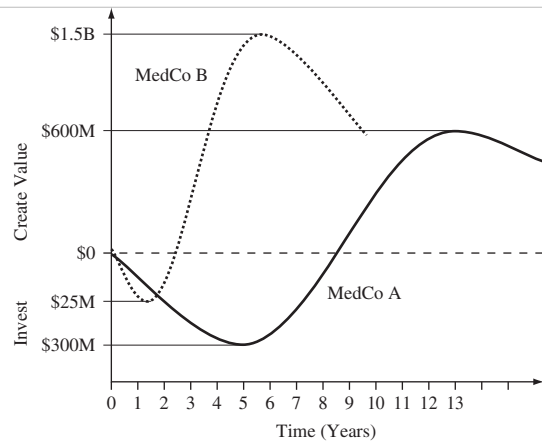


FIGURE 4.3(b) Comparing MedCo A and MedCo B Patient Monitoring Investments

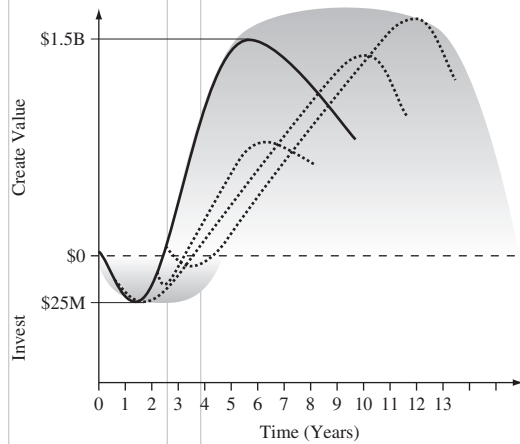


FIGURE 4.3(c) MedCo B Leverages Infrastructure and Exercises Options

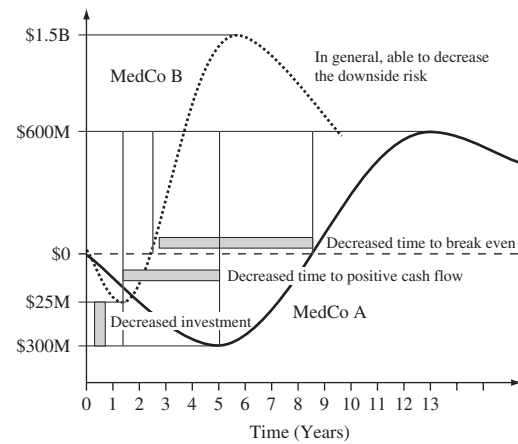


FIGURE 4.3(d) The Value of Leveraging Infrastructure and Exercising Options

\$25 million. The final 18 months and \$125 million will be spent doing custom installation at early adopter physicians' offices, connecting patients and families, and rolling out the new offering. Finally, assume that the high cost of custom integration at each physician office and customer site increases operating costs and limits adoption resulting in cash flow of only \$600 million by year 13. Clearly, most executives would not jump at the chance to invest in this business.

MedCo B executives were able to leverage existing IT infrastructure (e.g., customer and provider databases, networks, and call centers) built for other applications to launch the remote monitoring business in two years at a cost of \$25 million. Also, by leveraging the shared browser-based, public Internet, custom integration was minimized and

Figure 4.3c

roll out to patients, families, and clinicians was faster and cheaper. Finally, while proprietary advantage only lasted for three years from launch, cash flows approached \$1.5 billion due to the dramatically lower cost to acquire, connect, and serve customers.

Now suppose that the same network, database, call center and remote monitoring infrastructure could also be leveraged to pursue other value-creating IM business opportunities. See Figure 4.3(c). For example, information captured by the patient monitoring application and stored in customer and provider databases could be used to provide outcome data that could be sold to health care providers and could be used by MedCo for future pacemaker enhancements and for new products. A new Web-based subscription service could be sold to concerned children who were an integral part of their elderly parents' care regime. Finally, remote monitoring for other disease states could also be pursued—all leveraging existing infrastructure and capabilities. The cost—and risk—of pursuing each of these “strategic options” would be much lower and the revenue-generating productivity of the shared IT asset would increase.

Figure 4.3d

The shaded area below the break-even dotted line in Figure 4.3(d) represents the cumulative investment in IT applications and infrastructure over the life of the patient monitoring business and the shaded area above the line represents the cumulative value created by business applications built on the infrastructure. While each follow-on investment, representing the decision to exercise an IT-enabled strategic option, requires some additional development cost, the ability to leverage reusable infrastructure enables new applications to be built better, faster, and cheaper, increasing the productivity of the IM asset. In addition, reusable infrastructure decreases the risk involved in implementing a new application and improves innovative capacity.

Driving Profitable Growth

With a lean, flexible IT infrastructure in place, companies like MedCo B are poised to pursue opportunities to drive profitable growth. While cost control efforts can increase profits, opportunities in this category are characterized by the ability to *increase revenues*. There are two key categories of IT-enabled revenue-generating opportunities that can be pursued. First, revenue-generating capabilities can be enhanced. Second, IT-enabled product/service or business offerings can be launched.

While back-office enterprise processes (e.g., procurement, HR, finance) can be considered part of a firm's infrastructure—supporting but not directly influencing revenue growth—efforts to improve customer-facing processes and the performance of employees directly responsible for revenue generation (e.g., employees associated with new product or business development, marketing and sales, customer service) can have a direct impact on revenue generation. Examples of IT projects that directly influence revenue-generating capabilities include systems that provide timely, actionable information (e.g., marketing or sales analytics, competitor) to knowledge workers and executives whose performance is measured based on the ability to drive revenue growth; customer relationship management systems that increase the productivity of salespeople; and reengineering of product and/or business development processes that enable executives to identify business-building opportunities, speed time to market, and evolve product/market channel positioning. These intra-firm revenue-generating capabilities can be enhanced even further when a company uses IT to extend its revenue-generating capabilities across firm boundaries.

IT-enabled or information-enabled products and services are another example of revenue-generating IT initiatives. The remote monitoring application developed by MedCo and the follow-on IT-enabled revenue-generating business opportunities are examples of this second class of value-creating IT applications designed to drive profitable growth.

Achieving Proprietary Advantage

While many use the term “strategic” to refer to any IT system that is remotely related to business strategy, the metrics for measuring proprietary advantage are much more strict. It is not enough to simply cut costs, drive revenues, or increase profits and asset efficiency. To achieve *proprietary advantage*, executives must also *change competitive positioning* as measured by (1) successful entry into a large and growing market or exit from a shrinking one; (2) achieving the number 1 or number 2 position in an attractive industry and providing evidence that the company can sustain that position over time; and (3) attracting loyal investors that pay a premium, as measured in price/earnings (P/E) ratio and other capital market measures, over other players in a company’s industry or even across industries.

Today it is hard to identify companies that have achieved *sustainable* proprietary advantage over time—with or without IT. It is even more difficult to find a company that has been able to climb back to the top of its industry from a near death experience. The next section describes how IBM fought back from the brink of extinction to take back its position as a global IT market leader. It was a core component of the turnaround. A three-case sequence, available from the authors, provides a compelling story of value creation and turnaround leadership.¹² Below, we excerpt from the case to highlight the short-term and long-term benefits that were gained by leveraging IT shared infrastructure to create strategic options, drive profitable growth, and to reestablish itself as a market leader, setting the pace for the industry.

Footnote 12

IBM’s Decade of Transformation: A Case Study in Turnaround Leadership and Delivering IT-Enabled Business Value¹³

Footnote 13

In 1990, IBM was the second most profitable company in the world and was completing a transformation that was designed to position it for success in the next decade. For the world leader in an industry that was expected to keep growing spectacularly, the future looked promising. But all was not well within IBM and its senior executives realized it. “In 1990, we were feeling pretty good because things seemed to be getting better,” one executive remarked. “But we weren’t feeling great because we knew there were deep structural problems.” Those structural problems revealed themselves sooner than anyone expected and more terribly than anyone feared. Beginning in the first quarter of 1991, IBM began posting substantial losses. Between 1991 and 1993 IBM

¹² L. M. Applegate, et al., *IBM’s Decade of Transformation (A), (B), and (C)*, (HBS Publishing Nos.: 805-130, 805-131, 805-132), 2005.

¹³ The IBM case study is discussed in more depth in L. M. Applegate, et al., *IBM’s Decade of Transformation (A), (B), and (C)* (HBS Nos. 805-130, 805-131, and 805-132). The case series provides a more detailed discussion of the IBM turnaround, including how the company, leveraged infrastructure, created options, drove profitable growth, and achieved proprietary advantage.

lost a staggering \$16 billion. In April 1992, John Akers, IBM CEO from 1985 to 1993, vented his frustrations during a company training program. His comment “people don’t realize how much trouble we’re in,” made its way from company bulletin boards to the press, shaking employee and investor confidence.

In April 1993, Lou Gerstner took charge. While many wondered how an executive with no technology background could rescue IBM, insiders knew that Gerstner was brought in—not to rescue the company—but to break it up for sale. In no time, however, Gerstner learned from customers, analysts, and employees that IBM’s value was not in its pieces. Reversing direction, he rallied support for saving IBM.

By 1995, the company was back on solid financial footing. Catalyzed by the Internet boom and the massive technology spending needed to ready businesses for the new millennium, IBM began growing again. By 2003, one decade after Gerstner set out to rescue IBM, the company had once more become the industry leader firmly holding the number 1 market share position in its IBM Global Services and Server businesses and number 2 in market share in its software business (behind Microsoft). After losing \$4.9 billion on revenues of \$64 billion in 1992, IBM generated \$7.6 billion in profits on over \$89 billion in revenue in 2003 with almost half of those revenues generated by IBM Global Services.

How did Gerstner turn around IBM? IT played an important role. Infrastructure was leveraged and processes were reengineered to reduce costs and improve asset efficiency as the company struggled to stem the bleeding. Having stemmed the bleeding in 1995, IBM executives began to cash in on the options value of its investments in infrastructure to drive profitable growth and achieve proprietary advantage.

Leveraging Infrastructure and Creating Options

When it became clear that he would fight to save the company, Gerstner acted quickly to reverse the company’s plunging profits and stock price and to keep customers from leaving in droves. He hired Jerry York, a former Chrysler CFO, and charged him with getting costs under control. Upon taking charge, York launched a benchmarking study to determine how IBM’s costs in each of its businesses compared with those of competitors. The results were daunting: The expense to revenue ratio (42 percent in 1993) needed to be reduced by 9 percent. This meant that the company’s expenses needed to be cut by at least \$7 billion.

Despite its prior leadership position in the IT industry, IBM’s internal IT infrastructure, like that of many of its customers, was out-of-date, inflexible, and costly to maintain. As a result, this poorly performing asset became a lightning rod for restructuring. When the dust cleared, IBM’s internal IT organization had contributed *over \$2 billion per year* to the \$7 billion per year cost reduction required. In fact, between 1994 and 1997, the cost of operating and running IT operations was cut in half. Key savings came from reducing the number of data centers from 155 to 3 regional “mega-centers” fed by 11 “server farms,” and a 60 percent reduction in headcount. IT leadership was centralized; 128 CIOs were reduced to 1. IBM’s 31 incompatible networks were converted to one common protocol Internet (TCP/IP) network.¹⁴ The system

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¹⁴ TCP/IP (Transport Control Protocol/Internet Protocol) is the standard used to communicate and share information on the Internet.

TABLE 4.2
Leveraging
Infrastructure
at IBM: IT
Operations

IBM Sample Projects and Value Drivers	Sample Financial Metrics
Leverage Infrastructure: IT Operations	
<ul style="list-style-type: none"> • Decreased data centers from 155 to 11, which feed into three “megacenters.” • Developed a single global Internet network to replace 31 incompatible networks, reducing network operating costs by over 50% while dramatically increasing network accessibility, functionality, and reach. • Shifted to “open source,” common standards for information processing (Linux) and from proprietary to industry standard enterprise applications (SAP, PeopleSoft, Siebel). • Redesigned system development processes to enable modular design and reuse. • Decreased number of global applications from 16,000 to 5,200. • 60% reduction in IT professional headcount; 128 CIOs to 1. 	<ul style="list-style-type: none"> • 50% reduction in total cost of ownership for data center and network operations and internal enterprise application development and maintenance. • Direct cost savings in internal IT expenses of over \$2 billion per year beginning in 1997. • IBM spent \$100 million between 1994 and 1996 to reengineer its IT infrastructure processes; ROI on the investment in infrastructure was less than 1 year.

development process was also reengineered and IT applications that were deemed to be “underperforming assets” were retired. Within two years, the number of internal applications that needed to be operated and maintained decreased from 16,000 to 5,200. See Table 4.2.

As cost-cutting got underway, Gerstner also focused on reengineering back-office processes. In late 2003, he assigned each member of the Corporate Executive Committee the responsibility for a functional reengineering project (e.g., procurement, product development, sales). He set two priorities for these projects: (1) Get cost out as quickly as possible; and (2) “Clean sheet” the process and redesign it for global use. The redesigned processes would form the foundation for sustained cost competitiveness and best-in-class operations as the company embarked on the growth phase of its transformation. An IBM executive explained how procurement, logistics, and fulfillment processes were standardized and streamlined.¹⁵

In 1995, each of our key brands handled its own procurement, logistics, and fulfillment activities. As a result, we had silos of these activities all over the company. During 1994 and 1995, we began to reengineer and standardize activities. If there was someone on the outside that could perform the activity better, faster, and cheaper than us, we outsourced the physical activity and kept the strategy, planning and management. For example, in logistics, we now handle all of the planning, and management centrally but we outsource all of the warehousing and distribution to a third-party partner. In addition, given our decision to move away from competing with enterprise application software vendors, we decided to partner with SAP, PeopleSoft, and Siebel and use the same software internally as our customers used.

¹⁵ Author interview, January 2004.

Table 4.2

Footnote 15

TABLE 4.3 Leveraging Infrastructure at IBM: Enterprise Support Processes	
IBM Sample Projects and Value Drivers	Sample Financial Metrics
Leverage Infrastructure: Enterprise Support Processes	
<ul style="list-style-type: none"> Streamlined, integrated, and centralized IT-enabled enterprise processes (e.g., procurement, enterprise resource planning, human resources, payroll, finance). Selectively outsourced activities and processes where IBM was not best-in-class (e.g., HR, physical warehouse, inventory management, selected logistics). Decreased the number of financial centers from 67 to 8 and financial applications from 145 to 55. Decreased the cycle time for accounting close from 187 to 7 days. eEnabled then decreased the number of suppliers to 33,000; electronic purchases reached 95%. Centralized and integrated the supply chain and outsourced to IBM Global Services; 19,000 employees managed procurement, inventory, and logistics for over \$47 billion in parts, equipment, and services. Decreased maverick buying from >35% to <0.2%. Supplier quality increased from <85% to > 99%. Purchase order processing time decreased from >30 days to <1 day. Ability to “sense and respond” to customer demand enabled IBM to quickly meet unexpected rise or fall in demand for products. Supplier, employee, and partner satisfaction scores doubled. Winner MIT Process Improvement Award and Purchasing Magazine Medal of Excellence. 	<ul style="list-style-type: none"> \$7 billion in direct savings + \$2 billion in cost avoidance per year from supply chain improvements. Cash generation increased by \$8 billion from supply chain cost savings. HR, Payroll, Finance process costs reduced over 50%, representing almost \$1 billion in direct cost savings per year. Purchasing expense/Revenue ratio decreased from 3.2% to 1.5%.
Create Options	
<ul style="list-style-type: none"> Transferred internal IBM shared services and centralized process reengineering infrastructure and expertise to IBM Global Services where it became the basis for new service offerings, including business transformation outsourcing. Leveraged end-to-end IT-enabled processes to deliver real-time, actionable information to internal IBM decision makers and to customers, suppliers, and business partners. Enabled continuous improvement and organizational learning. 	<ul style="list-style-type: none"> See Metrics associated with profitable growth and proprietary advantage.
<p>Within one year of reengineering procurement processes, costs were down 20 percent and the time needed to complete and confirm supply orders had decreased from an average of 48 hours to 2.5 hours. By 2000, 94 percent of goods and services, representing \$4.3 billion were procured online from 24,000 worldwide suppliers at a cost saving of over \$370 million annually. And, even as year-over-year growth in procurement volume increased by 60 percent between 1999 and 2000, no new staff were added. (See Table 4.3 for a summary of benefits due to cost-cutting and reengineering or back-office support processes.)</p>	

Table 4.3

Driving Profitable Growth

In addition to using IT to support reengineering of enterprise support processes, IBM executives also redesigned customer-facing processes to lower costs while also improving revenue generating capabilities. Research and new product development processes were among the key revenue-generating processes targeted for improvement when benchmark studies indicated that, in over 85 percent of new product launches, IBM's time to market was at least 1.25× slower than best-in-class competitors and that the development expense to revenue-generation ratio was over 2× higher than best-in-class.

By 1995, IBM executives had streamlined and integrated the new product development process to reduce time to market and lower development costs: Abandoned project expense were decreased by over 90 percent, the warranty expense to revenue ratio decreased by 25 percent, and time to market for new products improved 67 percent. Overall, product development expenses were decreased by 50 percent, generating over \$1.6 billion per year in cost savings and, more importantly, driving increased revenues from the increased rate of new products that entered the market much faster. In 2003, for example, of 22 new businesses that had been launched within the previous two years, four were already generating over \$1 billion in revenues per year and another three were experiencing double digit revenue growth.

In addition to reengineering revenue-generating processes, IBM also leveraged the Internet to develop Web-based portals and tools designed to provide timely, actionable information to support business decision making. IBM Global Services consultants used the tools to quickly develop a Web-based knowledge-sharing portal for consultants in its rapidly growing and increasingly more complex services business. At a cost of only \$25,000 invested over several weeks, the consultants launched the portal and within one year had decreased consultant engagement times by 40–80 percent, increased revenues per consultant by 20 percent, and improved contribution margin per consultant by 400 percent. In addition, the Web was also used to shift a significant portion of its eLearning training programs online, saving \$350 million in training costs per year.

While the initial return to profitability and a positive return on equity were driven by cost savings and improved asset efficiency, during the late 1990s, IBM turned the corner and began to grow revenues. But at only 5.7 percent average growth per year, IBM lagged others in the industry that were experiencing double-digit revenue growth rates.

While IBM Global Services (IGS) had been leveraging the data center expertise and partnerships that it used in running IBM's internal global data centers and reengineering to augment its outsourcing services and to expand its service offerings. Leveraging its acquisition of Price Waterhouse Consulting (PWCC), in 2002 and 2003, IGS launched two new services offerings: Business Consulting Services (which leveraged the 30,000 business consultants from PWCC) and Business Transformation Outsourcing (BTO), which offered consulting and outsourcing services for HRM, finance, procurement, supply chain management, and customer relationship management enterprise processes.

In September 2003, Procter & Gamble (P&G) signed a 10-year, \$400 million BTO agreement with IBM to outsource their payroll processing, benefits administration,

Footnote 16

Footnote 17
Table 4.4

Footnote 18

compensation planning, expatriate and relocation services, travel expense management, and human resources data management for over 98,000 P&G employees in over 80 countries around the world.¹⁶ In doing so, P&G gained access to partnerships that IBM had established with Fidelity, ADP, and Ceridian—leaders in HR outsourcing and partners in providing HR services to internal IBM employees. IBM expected that the global market for BTO services would exceed \$100 billion in revenues by 2006.¹⁷ In fourth quarter 2003 alone, IBM signed over \$3 billion in BTO agreements that would provide ongoing revenues for years to come. Table 4.4 summarizes how IBM leveraged the best-in-class, lean, yet flexible, infrastructure to begin cashing in on options to return IBM to double-digit revenue growth during an improving, but still sluggish, economy.

Achieving Proprietary Advantage

The launch of its BTO service offering, when coupled with the launch of 22 unique new technology products, in late 2002 and early 2003, marked the turning point in IBM's transformation from profitable revenue growth to proprietary advantage. The new generation of products and services were developed using IBM's proprietary assets (including proprietary IT assets) that would be exceedingly difficult to replicate. These scarce resources came from the integration of IBM's broad technology research and product leadership, its 60,000 business strategy and technology consultants, and its world-renowned research capabilities. The ability to deploy these assets around the world, further enhanced IBM's proprietary advantage.

Building on the unique differentiation and proprietary advantage provided by its BTO services offering, in 2004, IBM launched another new offering that, demonstrated the "options value" of the infrastructure, capabilities, and assets that IBM had built over the previous decade. This new offering, called IBM Business Innovation Services, leveraged IBM's unparalleled strength in technology and analytical research with its product specialists, strategy consultants, and service providers to help customers solve tough problems. An IBM executive from the Mathematical Sciences Research unit, explained:¹⁸

When you add tremendous advances in processing speed to the fact that we can now harness the capacity of hundreds of processors connected within an "On Demand" network and can access real-time "On Demand" data from anywhere in the world, the analytical power becomes staggering. This is why access to researchers that can develop new analytical models to solve complex real-world problems is such a huge competitive differentiator for us. The tougher, messier, and more important the problem, the more value we can add for our customers.

Another IBM executive went on to state that adding direct customer contact with IBM researchers differentiated IBM's product/service offerings three key ways.

First, our customers believe that having direct access to IBM's distinguished scientists to solve their tough problems is a huge differentiator that has helped our Business Consulting

¹⁶ IBM Press Release, September 9, 2003.

¹⁷ IBM Annual Report, 2003, p. 7.

¹⁸ Author interview, January 2004.

TABLE 4.4 Driving Profitable Growth at IBM

IBM Sample Projects and Value Drivers	Sample Financial Metrics
Drive Profitable Growth: Revenue Generating Capabilities	
<ul style="list-style-type: none"> • Benchmarked new product development process and found slow time to market (85% of projects at least 1.25× longer than best-in-class) and development expense ratio that was over 2× higher than best-in-class. • Redesigned hardware/software research and new product development processes to reduce time to market and lower development costs. 	<ul style="list-style-type: none"> • Abandoned project expense decreased by over 90%. • Warranty expense to revenue decreased by 25%. • New product development cycle time: 67% faster time to market. • Decreased product development expense ratio by 50%, generating cost savings of over \$1.6 billion annually.
Drive Profitable Growth: Actionable Information and Business Analytics	
<ul style="list-style-type: none"> • Developed knowledge management, content, collaboration, and Web portal infrastructure and tools to enable knowledge workers to develop personalized knowledge sharing and business analytics • IBM Global Services developed a Web-based knowledge sharing portal to leverage its consultants' expertise during period of rapid growth. • Partnered with Siebel to reengineer Customer Relationship Management (CRM) processes and link to intranet portals. • 68% of employees rank the intranet as preferred channel for doing business. 	<ul style="list-style-type: none"> • Consultant intranet led to decreased consulting engagement time by 40–80%, increased revenues per consultant by 20%, and improved consulting margins by 400%. • eLearning saves \$350 million per year on employee education (12% YOY savings). • Internal intranet, content management, and collaboration tools become products and generate double-digit revenue growth in 2003.
Drive Profitable Growth: IT-Enabled Product/Service Offerings	
<ul style="list-style-type: none"> • Leveraged shared services infrastructure and expertise to deliver services to internal IBM customers and to offer significant enhancements to its data center outsourcing business. • Launched new offerings related to business transformation outsourcing, e-business and Web services. • Leveraged partnerships with best-in-class software and services firm (e.g., Fidelity in pension fund administration, ADP in HR, SAP in enterprise resource planning, and Siebel in customer relationship management) to launch Business Transformation Outsourcing (BTO) services business. • By 2003, 22 of 25 new business offerings had transitioned from new ventures to high-growth businesses. 	<ul style="list-style-type: none"> • IBM Global Services revenues exceeded \$46 billion in 2004, up from \$15 billion in 1992 and 36 billion in 2002. • Linux-based (open standard) server market revenues grew at 35% per year. • Server revenues grew at 32% and contribution margin increased to 31%. • Software revenue increased to \$14.2 billion in 2003, up from \$11.1 billion in 1992 • Four new product offerings generated over \$1 billion in revenues annually and three additional new businesses doubled their revenues. • In total, IBM revenues grew from \$64 billion in 2002 to over \$96 billion in 2004. • Profits increase from \$3 billion in 2002 to over \$8 billion in 2004.

Services group win consulting projects like a sophisticated logistics scheduling project with BostonCoach. Second, we can bring inventions to the market that can become new products and also can spur new services revenues. For example, our research lab in Zurich built a new advanced security architecture that BCS consultants are using in a project with the French organization that handles land deeds. Third, we bring deep, specialized expertise in a wide range of areas that a typical consulting organization cannot access. For example, prior to its merger with IBM, PWCC was working with a transportation logistics firm on the reengineering of its core logistics process. The proposed process and system would have met the client's stated requirements but could not address a pressing problem that everyone agreed could not be solved using current technology. After the PWCC/IBM BCS merger, researchers became involved in the project and brought the sophisticated optimization modeling expertise needed.

Spurred by double-digit growth in revenues and profits from its services business and strong growth from new products from its hardware and software units, by 2004, IBM had begun to outperform its competitors. Proprietary advantage was not achieved through any single strategic coup but was instead created by IBM's ability to leverage infrastructure and capabilities from across its global organization and its extended enterprise of partners. The Business Transformation Outsourcing and Business Innovation Services offerings were examples of new differentiated offerings that could be quickly launched and grown to drive profitable growth and create competitive advantage.

In one short and tumultuous decade the "dinosaur" that had faced extinction had once more assumed a position of leading the industry, having achieved number 1 position in Global Services and Servers, number 2 in software, and number 3 in hardware. The success confirmed what Gerstner had heard from customers when he first took charge of the failing company and sought advice on how to complete its breakup.¹⁹

[Our customers] said repeatedly, "We don't need one more disk drive company, we don't need one more database company or one more PC company. The one thing that you guys do that no one else can do is help us integrate and create global solutions."

By late 2003, the "One IBM" vision became a reality. Table 4.5 summarizes how IBM leveraged its resources and capabilities to create proprietary advantage.

No longer an IT company, by 2004, IBM had transformed into a shared infrastructure and services provider that enabled businesses and industries to participate in the Business On Demand vision that had transformed IBM. This first-hand experience at driving massive organizational, cultural, and strategic change inside IBM became just as much of a foundation for its new differentiated offerings as the IT infrastructure and global processes that had been created to enable IBM's transformation. The story of IBM's transformation provides a compelling example of how a firm embedded IT within a series of strategic initiatives designed to create and then leverage a best-in-class, lean, yet flexible, infrastructure to drive profitable growth and create proprietary advantage. The case demonstrates the use of the IT Value framework and provides examples of actions taken at each step in the company's evolution and the value delivered at each stage.

¹⁹ R. Austin and R. Nolan, *IBM Corporation: Turnaround 1991–1995* (HBS No. 600–098), p. 20.

Footnote 19

Table 4.5

TABLE 4.5
Creating Proprietary Advantage at IBM

IBM Sample Projects and Value Drivers	Sample Financial Metrics
Achieve Proprietary Advantage	
<ul style="list-style-type: none"> Built IBM Global Services into the number 1 global IT services provider. Launched unique BTO service offering in 2002 (e.g., P&G signs a \$400 million/multiyear contract; Sprint signs a multibillion/5-year contract). Launched unique Business Innovation Services offering in 2004 and closed several high profile, multimillion dollar client engagements. BTO and Business Innovation Services provides proprietary advantage and strategic differentiation. 	<ul style="list-style-type: none"> Worldwide Global Services market estimated to reach \$14 trillion in 2010; BTO market estimated to exceed \$100 billion in 2006. Market share: number 1 in services and servers; number 2 in software (behind Microsoft). 2003 market capitalization = \$159 billion (second to Microsoft); P/E ratio = 4.42 (number 1 in the industry).

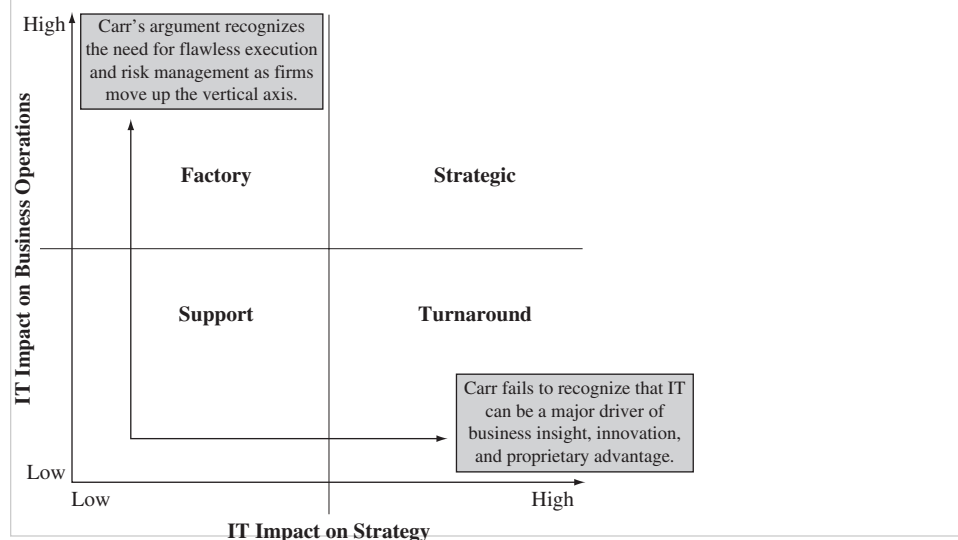
Nicholas Carr Revisted

The IBM case example provides a compelling example that helps frame a response to the Nicholas Carr argument that IT doesn't matter. Clearly Carr was considering the IT legacy that has chained an organization and an industry to both a strategy and operating model that resists attempts at innovation and insight. The IBM case demonstrates that emerging lean, yet flexible, IT-enabled business infrastructures can become a value engine, that creates strategic options and then decreases the cost and time of pursuing those options and cashing in on their value.

The Strategic Grid framework, discussed in Chapter 1, helps put the lessons from the IBM case in perspective (see Figure 4.4). Carr is correct when he claims that efforts should be made to create a best-in-class lean and asset efficient infrastructure.

Figure 4.4

FIGURE 4.4
Nicholas Carr's Argument as Framed on the Strategic Grid



Every effort should be made to leverage an infrastructure to share costs and improve asset productivity—as long as the decision to centralize or outsource does not disrupt business operations or future revenue-generating potential elsewhere in the firm or with partners, customers, suppliers, and soon. Risk management becomes essential as the importance of IT to business operations increases. Failure to deliver flawless execution as a firm's position on the strategic grid moves up the vertical axis can threaten a firm's (and an accountable executive's) survival.

But Carr failed to recognize that emerging networked IT infrastructures have dramatically changed our ability to shift position on the horizontal axis of the grid. As a firm harnesses the power of lean, yet flexible, IT infrastructure to cash in on the strategic options value, IT-enabled scarce resources and proprietary advantage can be created and sustained.

Summary

As we enter the twenty-first century, excitement concerning the potential of IT to transform business and drive improved performance has never been higher. But, the fascination with IT business innovation comes at a time of significant uncertainty and change as entrenched players and new entrants struggle to define a sustainable proprietary position for success in the turbulent twenty-first century. While most agree that Internet-based technologies have progressed at lightning speed since they were introduced to the business world in the early to mid-1990s, developing common standards and robust commercial technologies takes time. The challenge of integrating new technologies into the “legacy” of computers, networks, and systems already in place within companies adds to the problem. To achieve the grand vision of the Network Economy a new approach to building businesses and measuring performance is needed.

This chapter explored the challenges that executives face as they attempt to develop the business case for digital business in the context of increasing volatility and uncertainty. Executives should consider the following questions as they attempt to forecast the value of digital business strategies and the ability of their organizations to execute them.

1. How well do you understand the linkages among your strategies, the capabilities and infrastructure built to execute those strategies, and the value that can be created for all stakeholders (e.g., customers, suppliers, partners, employees, investors)?
2. Is your business infrastructure best-in-class in terms of asset efficiency and strategic flexibility? How can IT be used to improve your ability to leverage infrastructure and assets to drive profitable growth and create strategic options for the future?
3. How well do you understand the key factors that drive business performance in your organization and industry? What must be done well to reduce costs, grow revenues, and improve asset efficiency? How can IT be used to drive profitable growth and achieve proprietary advantage?
4. Conduct an audit of your digital business infrastructure. How much are you spending to run and maintain current IT operations? On average, how long does it take and how much does it cost to implement a new IT-enabled business product, service, or strategy? What are key bottlenecks that slow down the IT-enabled business innovation process and the key activities that increase the cost?

5. Create a list of IT-enabled business strategies and the solutions that could be developed that would leverage an open standard networked infrastructure. Are there opportunities to:
 - a. Improve internal operating efficiency and quality?
 - b. Improve knowledge worker performance and enhance organizational learning?
 - c. Increase employee satisfaction, engagement, and loyalty and attract and retain top talent?
 - d. Increase customer/supplier satisfaction, engagement, and loyalty?
 - e. Attract and retain high value-added customers, suppliers, and partners?
 - f. Add “information value” to existing products and services or create new information-based products and services?
 - g. Streamline and integrate channels to market, create new channels, and integrate multiple online/offline channels?
6. From the above list, identify one or more simple, yet powerful, “big wins” where IT could significantly improve business performance. What are the realistic business goals you expect to achieve? Define measurable performance improvements that can be achieved quickly (usually within one year) and the follow-on benefits that will accrue as you pursue strategic options. How will these performance drivers link to financial and capital market performance? Validate your analysis by talking with others who have implemented similar systems. Ask for lessons learned and areas of high risk that must be managed closely. Collect benchmark data on the benefits that can be expected.
7. Do you have the resources, expertise, and skills required to successfully complete these projects? Can outside partners be identified when the organization’s resources are not sufficient?
8. Do you have the political support required to ensure that the project can be completed quickly and effectively? Do project leaders have the resources, authority, and accountability required to get the job done?
9. Have you considered ways to limit the scope of the project? Keep in mind the “80/20 rule,” you can often achieve 80 percent of the benefit with 20 percent of the effort. Don’t push to include hard-to-implement features and functions that are not critical to overall project success.
10. Has an effective change control process been implemented? Can you ruthlessly manage “project creep” while not losing sight of the good ideas that emerge during implementation? To assist with the latter task, create two task forces to search for follow-on “options” benefits. One task force can be charged with identifying new IT-enabled business building opportunities to drive profitable growth and build scarce resources and capabilities. The second task force can be charged with searching for ways to continuously enhance infrastructure performance to ensure that the organization achieves and maintains best-in-class status—through partnering or internal development.