HOW CIOs MANAGE IT DURING ECONOMIC DECLINE: SURVIVING AND THRIVING AMID UNCERTAINTY

Executive Summary
As the prosperity of the 1990s gave way to today’s economic slowdown, IT organizations had to decide how to support new application development while cutting costs. While reducing IT investments might cut costs, future growth hinges on continued IT investments. Interviews with twenty CIOs uncovered four approaches to managing IT during the current economic decline. The CIOs have either extended their IT lifecycle, bulletproofed their infrastructure, cleaned house, or maintained their legacy – or moved among these approaches. Three lessons for managing IT in future business cycles from this study are: (1) disciplined IT decision-making evens out IT ups and downs, (2) regular IT strategic reviews build business-aligned portfolios, and (3) balanced IT spending yields business agility.2

The Economic Downturn Has Affected IT Budgets
Prior to the year 2000, when the U.S. economy was strong and enterprise-wide systems were readily justifiable, many firms undertook large information technology (IT) initiatives. But in 2000, after almost a decade of high growth and low employment, the U.S. economy began to decline in most sectors. The e-commerce bubble burst and many high-flying IT and telecom companies began to decline rapidly. Some sought to contain or reduce costs through consolidation.3 Concurrently, companies in many industries began questioning large IT initiatives, such as ERP (Enterprise Resource Planning) and CRM (Customer Relationship Management), because the reported failure rates were quite high.3,4

Since 2001, many IT budgets have inched up, at a declining rate. Overall, IT budgets increased about 8 percent in 2001,5 but only .1 percent in 2002.6 Even these essentially flat IT budgets in 2002, though, disguise how substantially some firms have cut back on IT spending. It is predicted that even if IT spending improves slightly in 2003, the increase will not clear out application backlogs.

1 Cynthia Beath was the senior editor accepting this article.
Leidner, Beatty and Mackay | Managing IT During Decline

The Research: Interviewing 20 CIOs

To uncover how CIOs manage during times of economic decline, we conducted interviews with 20 CIOs from across a range of industries—construction, financial retailing, general services, health services, insurance, IT consulting, manufacturing, retail, technology, and transportation. Thirteen of the organizations were headquartered in Dallas, Texas; five in Fort Worth, Texas; one in Houston, Texas; and one in California.

One retailer had revenue of $22B; the others had revenues between $818M and $9.8B. Company data was unavailable for five of the firms: four that were privately held and one that was a subsidiary.

Of the twenty CIOs, only five had occupied their current position for more than three years. Of the other fifteen, five had served between two and three years, six had served between one and two years, and four had served for less than one year.

Conducted between December 2001 and July 2002, most of the interviews were done in person over an hour and a half. A few of the interviews took place via conference calls. All the CIOs interviewed had a great deal of experience in the IT field and based on their experience both within their current organizations and at prior organizations, we have confidence that they were all highly competent, effective CIOs. Hence, we were in no position to compare or contrast the effectiveness of the CIOs. Rather, the interviews enabled us to discern four distinct approaches for IT management during economic decline.

In a December 2002 poll, 87 percent of Chief Information Officers (CIOs) stated that their application and project backlogs were putting their organizations’ operability and competitive advantage at risk. So while the economic downturn leads to pressures to reduce IT investments, demands for short-term profitability and long-term growth apply pressure to sustain IT investments. As a result, CIOs have found themselves in the pressure-filled situation of facing, on the one hand, tightening budgets and skepticism about returns on large IT project investments, yet, on the other hand, the need to continue to convince top management of the importance of continuing to make substantial IT investments.

One piece of popular prescriptive advice to CIOs has been to outsource as much IT infrastructure as possible. But many CIOs are reluctant to relinquish control, even though some outsourcers appear to be faring well in this downturn. For example, EDS recently signed a ten-year $4.5B agreement to re-engineer and manage Bank of America’s voice and data networks. Likewise, the City of Minneapolis selected Unisys to manage its IT infrastructure for $56M. The city expects to save $20M.

When the economy changes as dramatically as it has over the past three years, CIOs face important decisions. Yet, there is little guidance on how they should best manage IT during such times. We know that the business environment influences organizational strategy and decision-making. And we know that the environment can influence the value of information. But we do not know how an economic decline influences the management of IT. Thus, we seek to answer the question: How do CIOs manage IT during economic decline?

Four Approaches to Managing IT During Economic Decline

We discerned four approaches for managing IT during economic decline, as shown in Figure 1. They vary along two dimensions: the perspective for determining IT’s value (short-term vs. long-term) and the attitude toward the existing IT plan (retain vs. rethink). Each approach is characterized by a decision-making principle: Extend the Lifecycle, Bulletproof the Infrastructure, Clean House, or Maintain the Legacy.

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7 Ibid.
In describing their management approach, the CIOs typically spoke of “we,” meaning themselves and the firm’s senior management team. The CIOs developed their IT plan for coping with the economic decline, then the senior management team discussed the plan and approved it.

**Extend the Lifecycle Approach**

CIOs using the Extend the Lifecycle approach take a long-term perspective on IT investments during an economic decline and choose to lengthen the timeframe of the current strategic IT plan, rather than cancel or re-evaluate it; see Table 1. As one CIO told us, “We have a strong commitment to our five-year plan, but we are not opposed to stretching it out.” Showing confidence in the ultimate value of the IT plan, CIOs taking this approach aim to make steady, but slower, progress. Even when commitment to the plan is strong, though, the CIOs we interviewed believe it is wise to review the plan once or twice a year, and adjust project start dates when necessary. To conserve financial resources further, CIOs following this approach reduce or eliminate contractors on non-critical IT projects. At the same time, they make every effort to keep full-time staff and maintain the operational continuity of the department.

Senior managers who adopt this approach view IT investments as important to the firm’s competitive success. Investments during prosperous times are conservative, following the dictum “we manage in the good times for the bad times.” During downturns, the executives maintain confidence that previously funded IT projects continue to align with business plans, and thus are still appropriate.

The CIOs we interviewed believe it is important to avoid two extreme reactions during a decline: on the one end, “not cutting fast enough as revenues go away” and on the other, “abandoning IT initiatives so quickly that the future is mortgaged.” The concern over these two extremes is that if an organization does not make budget cuts quickly enough, the firm’s stock price will take a larger-than-necessary hit. However, if the organization makes budget cuts too quickly, then the future value of the firm will suffer.

Senior managers adopting the Extend the Lifecycle approach will spend resources on projects that have no immediate return, when these projects are strategic,
not tactical or short-term. Hence, senior management commitment to IT is critical. As one CIO said, “You’d better communicate, you’d better leverage solutions, leverage resources, [and] leverage support or else you’re not going to succeed in IT.”

The CIO at a manufacturing firm who takes the Extend the Lifecycle approach explains how his value is evaluated: “The predominant piece of my rating is still around driving change, and the effectiveness and efficiency of the organization. [It is about] taking cost out and improving delivery at the same time. It is not just about running a great department; it is morphing and changing the business model [by] taking cost out of the process while improving delivery.”

**Strengths and Weaknesses of the Extend the Lifecycle Approach.** The strengths of this approach center around its commitment to future plans; the weakness centers around the potential loss of short-term competitive advantage.

**Strength: There are no radical changes.** This approach does not radically alter the composition of the IT department nor the existing project portfolio. Hence, when the economy begins to recover, the IT organization should have little difficulty increasing the speed of project delivery to pre-decline levels. However, IT does need to be perceived as adding value to the organization. Warns the CIO of a major manufacturing firm, “When you have turmoil and economic pressures, you’d sure better be able to show top management how you are generating revenue or saving costs.”

**Strength: Support for IT initiatives continues.** Organizations that adopt this approach focus on adhering to the IT strategic plan and on the future value of IT projects. In fact, senior managers often view IT investments as less risky during a downturn than other investments, such as business acquisitions. Said the CIO of a major manufacturing company, “We [top management] really have to find investments that give us a good return, and in our case, these IT projects have fabulous returns…better than the bank and better than debt right now.”

**Weakness: Tunnel vision.** While the Extend the Lifecycle approach aims to eventually complete the organization’s most important strategic projects, it may lead to “tunnel vision—i.e., it might limit the organization’s ability to adapt to technological changes and obtain a short-term return or possibly a short-term competitive advantage. Moreover, if the organization is forced to adjust its strategic plan, its IT plan could lose relevance.

**Bulletproof the Infrastructure Approach**

CIOs using the Bulletproof the Infrastructure approach focus primarily on infrastructure projects; see Table 2. They take a long-term perspective believing that suc-
cess in the next economic growth phase will come from having an infrastructure that permits the IT organization to plug-and-play both independent and integrated applications.

The major aim of this approach is to create a foundation for integration. As one CIO notes, “I want to integrate these systems a little better so that I can run my systems cleaner and a lot more effectively.” This approach involves rethinking the existing IT plan and reprioritizing projects. Hence, some approved projects are placed on indefinite hold during a downturn. “The wish list went away as we began to focus on the fundamental needs and requirements of the organization,” says one CIO.

The Bulletproof the Infrastructure approach replaces customized homemade applications with “vanilla applications,” notes one CIO (meaning, standard off-the-shelf packages) or “off the shelf open system architecture programs,” in the words of another. Due to the high cost and long development time of customized IT projects, firms following the Bulletproof the Infrastructure approach are willing to purchase reasonably priced packages that quickly address most of their users’ requirements. For example, rather than invest significant time and money on a fully integrated, multi-module CRM system (that would require extensive tailoring and customization to meet all requirements), the CIO is more likely to recommend purchasing an inexpensive and standardized CRM module to address a distinct business need, such as partner relationship management. This approach trades lower system functionality for lower cost and faster implementation. But an added benefit is that standard IT applications are heavily discounted in a depressed IT market. Standard products also cost less to maintain. So this approach reduces the costs of maintaining the infrastructure in the future.

Organizations adopting the Bulletproof the Infrastructure approach have done so because they had embarked on a wide variety of systems when the economy was strong – to remain competitive. Some systems were built in-house and some were externally developed, without a disciplined planning process. When the downturn hit, these IT departments had difficulty maintaining a consistent and reliable IT infrastructure because there were so many projects underway. As the CIO of a major technology company says, “During the period of rapid growth, we did not implement our applications with a good architectural view of how they were all going to work together. So we ended up with a lot of disjointed systems. [Even] databases outside a core area…have become so fragmented that it is now difficult to build new applications that require integrating all these apps we built the last several years.”

When economic growth stagnated, management became concerned that not having a disciplined IT operating environment was leading to a state of disarray. Hence, when the economy begins to grow again, applications will be expensive and time-consuming to implement, placing the organization at a competitive disadvantage. In short, the absence of an enterprise-

<table>
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<th>Table 2: Summary of the Bulletproof the Infrastructure Approach</th>
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<td>Approach</td>
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<td>Description</td>
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<td>Objective</td>
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<td>Strengths</td>
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<td>Weaknesses</td>
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<td>CIO Challenges</td>
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wide IT technology planning process during the economic growth of the 1990s has resulted in an IT infrastructure problem at these firms.

The challenge facing CIOs who adopt the Bulletproof the Infrastructure approach is to convince top management that the organization’s future competitive success is directly tied to supporting business-critical IT projects – and these projects need a solid infrastructure. The importance of this reasoning is illustrated by the CIO at a transportation firm when he compares infrastructure planning to the shape of a pyramid, saying, “[Let’s] look at the pyramid [approach] again. If you have a weakness in your core base, that’s where you should be spending your time in years of recession. Build the base so that when the economy recovers, you can quickly scale and recover. That’s what we are doing here. We are building the base, getting a solid footing, and then we will be positioned to drive innovation. Driving innovation will be a lot easier if we are not doing a lot of retrofitting and patching with baling wire down to the base.”

This same sentiment is articulated by the CIO of a retailing firm: “I am going to kind of bulletproof my infrastructure and I am going to make it industrial strength because I know that this downturn is not going to last forever. When the economy does come back up…I am going to be a bit more prepared for the upswing. I was caught off guard the first time. So lesson learned. And I am prepared now.”

**Strengths and Weaknesses of the Bulletproof the Infrastructure Approach.** The strengths of this approach center around its preparation for the future; the weakness, around the assumption that the decline will allow sufficient time to complete infrastructure changes.

**Strength:** There is commitment to an enterprise-wide IT infrastructure. This approach allows the CIO to justify infrastructure projects on the grounds that a stable and integrated IT infrastructure will be a competitive weapon, once the organization again experiences rapid growth. Given the pressures during high-growth periods to build projects that link important business processes among business units, infrastructure projects can get sidelined. Times of economic downturn, and the subsequent reduction in IT funding, provide an opportunity to re-focus IT spending on much needed projects that will stabilize the organization's IT infrastructure.

**Strength:** It paves the way for a breakaway. This approach also frees a firm to envision applications that support future growth. While funding is being allocated to infrastructure projects, planning attention can be directed toward applications that differentiate the company from its competitors, once the economy revives.

The CIO at a major technology company quotes his CEO as saying, “Let’s invest more aggressively in systems that will differentiate us from our competition and help lead the breakaway when the economic slowdown lessens.” Another CIO at a retailing firm states, “Our competition is not backing off one iota. What we better not do is really pull in and make serious cuts, and then come out of the cycle to find we are out of the ball game.”

**Weakness: It assumes a long period of decline.** A major weakness of the Bulletproof the Infrastructure approach, though, is that it assumes the IT department will have a long time to create a stable, scalable, flexible, and fully integrated IT infrastructure – anywhere from six months to two years.

If a firm launches into a number of long-term infrastructure projects assuming that it has a “two-year window” to complete these projects, and the economy “rebounds” in six months, then the firm is faced with deciding either to complete the existing infrastructure projects or divert IT resources to new projects that will provide competitive advantage. Management teams typically dislike spending scarce IT resources on projects that will not provide direct business benefits (such as, infrastructure projects), so they will likely apply immediate pressure on the IT department to work on new projects once the economy turns around. This pressure may result in infrastructure projects not being fully completed before new applications development begins.

**The Clean House Approach**

CIOs using the Clean House approach take a short-term view of IT, seeking applications with quick returns. They focus on re-assessing their IT plan, eliminating systems that do not support the organization’s strategy, and developing a new, short-term-focused portfolio of systems for development; see Table 3. Convinced that proper IT investments are important to overall organizational success, these CIOs believe their current IT strategy must be overhauled to support the organization’s current business plan.

Firms that have adopted the Clean House approach have done so to impose discipline. During the late 1990s, they had ready availability of money, so they rapidly implemented an unprecedented number of applications but lost discipline in making IT investment...
Table 3: Summary of the Clean House Approach

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<tr>
<th>Approach</th>
<th>Clean House</th>
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<tr>
<td><strong>Description</strong></td>
<td>The firm uses the downturn to re-evaluate existing and planned applications</td>
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<td><strong>Objective</strong></td>
<td>To regain control over application development and implementation and ensure that systems being built are consistent with the firm’s goals</td>
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<td><strong>Strengths</strong></td>
<td>Eliminates projects the firm believes should not have been commenced in the first place</td>
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<td></td>
<td>Gives IT a greater role in determining what systems are necessary and on what platforms</td>
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<tr>
<td><strong>Weaknesses</strong></td>
<td>Heavy time consumption</td>
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<td>Might leave some business units frustrated with the IT group for not continuing to implement systems previously approved by the business unit</td>
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<tr>
<td><strong>CIO Challenges</strong></td>
<td>Building credibility in the IT group’s decisions regarding which applications to build and which to scrap</td>
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decisions. Senior managers recognized that the unbridled development of new IT systems was spiraling out of control, but they could do little to prevent well-financed business units from looking elsewhere for development whenever the IT department declined to undertake the project. The downturn has given the IT organization the opportunity to regain control.

One software company CIO says the downturn finally allows IT to “take an inventory on projects” and, with the support of senior management, require owners of planned-but-not-yet-developed systems to cost-justify those systems. “This is a healthy time for us,” he says. “The growth and excessiveness of our budget in the 90s actually fueled us to do things that were not healthy for our business long-term.” By re-evaluating the IT plan, the firm is eliminating many unnecessary projects and “trimming the budget so we can invest.” A major challenge of this approach, though, is that CIOs must implement cost-saving measures as they develop a new strategy to use current IT resources better.

The Clean House approach thus allows CIOs to start over and develop an IT strategy for the organization’s most important business needs. However, the CIOs must also convince top management that new IT planning policies are needed, so that business units spend their money on projects that meet enterprise-wide business objectives. Hence the enterprise-wide IT strategic model must closely align with the needs of the business units, by being based on their input. As one CIO notes, “What we have tried to do here is to map our IT investment back to [our] business strategies because IT is very much an enabler of those strategies.”

To re-gain credibility with business unit managers, CIOs using the Clean House approach need to focus IT resources on short-term, highly visible projects that will provide tangible financial benefits to key operational business functions. By rapidly demonstrating the business value of IT, these CIOs can begin to re-establish the importance of the IT function to the organization. One CIO adopting this approach states that the best way he can re-establish the value of IT within the organization is to implement a new IT strategy that effectively mixes on-going infrastructure “foundation” work with IT projects that provide immediate financial returns or “quick wins” during the current business year.

**Strengths and Weaknesses of the Clean House Approach.** The strengths of the Clean House approach center around its reassessment of the alignment of IT projects to organizational strategy; the weaknesses center around the potential loss of credibility facing the IT organization.
**Table 4: Summary of the Maintain the Legacy Approach**

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<th>Approach</th>
<th>Maintain the Legacy</th>
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<tr>
<td><strong>Description</strong></td>
<td>CIOs put a hold on the existing IT plan, assuming it can be continued when the economy starts recovering. CIOs focus on continuing the life of legacy systems in the short term.</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Use the fewest resources possible to maintain current service levels until funding is available to move forward with planned applications.</td>
</tr>
<tr>
<td><strong>Strengths</strong></td>
<td>Focus on ROI. Focus on Cost Optimization (Cost Minimizer).</td>
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<tr>
<td><strong>Weaknesses</strong></td>
<td>Potential loss of most advanced designers and programmers whose skills are not needed on legacy systems.</td>
</tr>
<tr>
<td><strong>CIO Challenges</strong></td>
<td>Maintaining internal morale as programmers are released. Convincing senior management that outsourcing critical IT operations would be detrimental over the long term.</td>
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**Strength: IT strategy is customized.** One advantage is that the organization takes the time to evaluate IT and scrutinize how well it is helping achieve short-term and long-term business objectives. From internal evaluation, the IT organization can better develop an enterprise-wide IT strategy that mirrors the business strategy, goals, and objectives.

One CIO describes his firm’s old and new IT strategy development processes by analogy, saying, “We used to drive down the freeway at midnight with no headlights. The way we saw where we were going was [by] shining a flashlight out the back window. But now we have turned on the headlights. We are learning to drive faster than a couple of miles an hour, but we still don’t have a GPS system. We’re working on getting that with some analytics.”

**Strength: Top management is committed to the IT strategy.** To develop and implement a new IT strategy that meets the organization’s needs, the top business managers must actively participate in the strategy development process. In so doing, their commitment to the final IT business model should be high, making implementation more likely.

**Weakness: The process is time consuming and expensive.** The Clean House approach involves re-assessing the role of the IT function. Although this approach garners top management’s commitment, it also consumes their limited time because they are expected to participate in strategy development. Given that the business units themselves likely face cost pressures from the downturn, the unit managers are unlikely to welcome additional time demands from the IT department. They have their own strategic re-evaluations to perform.

**Weakness: Weakens organizational confidence in IT leadership.** A primary CIO role is that of IT visionary. In eliminating some previously approved projects and requiring business units to justify other projects, CIOs might send the unintended message that the IT department is unable to manage growth. This perception might decrease unit leaders’ confidence in the IT organization in the future.

**Maintain the Legacy Approach**

CIOs using the Maintain the Legacy approach adopt the short-term perspective of just surviving the downturn by prolonging the life of the legacy to last through the decline. There is little or no future planning. Infrastructure improvements are shelved – to be revisited when the economic decline ends. The application portfolio is not rethought or re-assessed; it is simply cancelled until more prosperous times. Only investments that can demonstrate a quick return are considered. It is not uncommon to hear CIOs using this approach speak of a six-month or even three-
month return on investment. Says one CIO, “In a good economy, an ROI of two to three years is okay. In a bad economy, less than one year is essential. In fact, if you can’t get business value in six months, you should chuck the project.”

Pressures to reduce IT expenditures force some CIOs to adopt this approach because they are only given enough financial resources to continue operating essential legacy systems. As one CIO states, “A year ago, [we] focused very much on building an environment to integrate all the new systems we were going to need to support increased business. Now, the difference is, we are exploiting the same integration effort to extend the life of the legacy.”

In adopting the Maintain the Legacy approach, CIOs need to develop standard ways of monitoring the legacy systems to receive “health alerts.” Moreover, they need to find ways to improve business processes “without touching the legacy.” One approach is to reduce technical personnel costs by converting to a people-less “dark” operations floor. The operations staff who maintain and manage the legacy systems are replaced by an integrated monitoring and alarm system. A “lights out” data center can save money and improve management of IT resources.

To “keep some of that back-room stuff going a long time,” CIOs also must learn to “add things and change the business process by changing the interface to the system,” rather than change the legacy system itself. For example, the IT department may convert the user interface of a mainframe-based decision support system from text-based to graphics-based. Says one CIO, “Instead of focusing on…clever things, we just focus on what I would call traditional 'bread and butter' [projects].”

A significant challenge of the Maintain the Legacy Approach is how to handle lay-offs. Because the old systems are running the business, these CIOs “can’t get rid of the COBOL programmers” and are thus “forced to mortgage the future” by laying off the younger employees skilled in object-oriented programming, Java, and other current technologies. Therefore, it becomes important for the CIO to find ways to motivate the remaining older employees to develop new skills in current technologies. In one company, the average age of the IT workforce after layoffs was 47 years.

**Strengths and Weaknesses of the Maintain the Legacy Approach.** Its strengths come from its “now” focus. Its weaknesses stem from its preservation of the past.

**Strength: It focuses on IT return of investment.** Most IT funding goes to maintain the legacy. Remaining funds are only invested in small projects that yield quick returns. So the approach forces a fast-return ROI discipline.

**Strength: It focuses on optimizing current systems.** The challenge facing CIOs who adopt this approach is to find new ways to provide business value from IT with equal or fewer financial resources than in the past. With limited resources, these CIOs focus almost exclusively on projects to refine and optimize the operation of existing business systems. For example, an organization may choose to analyze a critical business process to reduce its costs and improve its operation. The analysis may recommend replacing the sales department’s manual “paper-based” order taking process with an on-line data entry system. Such a new interface would streamline this critical business process and would ultimately save the company money by eliminating unnecessary and time-consuming tasks.

**Weakness: It jeopardizes the organization’s competitive future.** By focusing IT resources only on tactical (short-term) and operational (day-to-day) IT initiatives, an organization chooses to ignore emerging IT applications and technologies that may improve the firm’s competitiveness in the future. Competitors that take a different approach may gain competitive advantage by implementing new technologies sooner—leaving the Maintain the Legacy CIOs to play technological “catch-up” to stay competitive.

**Weakness: It inhibits development of IT professionals.** While short-term thinking might have a positive effect on identifying projects to develop, it is a weakness in IT staffing. The disadvantage of this approach is that the organization loses the IT employees needed to build future systems. One CIO confidently states that she will be able to rehire these people when the economy recovers, saying, “Let’s face it, where are they going to get work right now?” Nevertheless, there is no guarantee that Maintain the Legacy organizations have the environment that will attract IT developers with the latest skills.

**Movement Among the Approaches**

Of the 20 firms in the study, nine use the Extend the Lifecycle approach; five, the Bulletproof the Infrastructure approach; three, the Clean House approach; and three, the Maintain the Legacy approach (see Figure 2). Although we conducted interviews at a single point in time, we could discern some movement
among the four approaches. In fact, we found the approaches not necessarily binding. Some CIOs began with a less disruptive approach—such as the Extend the Lifecycle approach—and moved to progressively more disruptive approaches when more drastic cost-cutting measures became necessary.

Specifically, we saw firms moving from Extend the Lifecycle to Clean House to Maintain the Legacy. We also noted firms moving in the opposite direction, from Clean House, to Bulletproof the Infrastructure, to Extend the Lifecycle. These moves (depicted in Figure 2 as arrows), as well as the apparent preference for the Extend the Lifecycle approach, are discussed below.

**Extend the Lifecycle is the Most Popular Approach**

As shown in Figure 2, nine of the 20 firms have adopted the Extend the Lifecycle approach to managing IT during the decline. There is no pattern discernible in terms of industry, organization size, or CIO tenure. What does seem common in these organizations, though, is their optimism that the decline will be ephemeral. If they can simply extend the current plan for a short while, they believe they can ride out the decline with few major changes to the application portfolio, development processes, or how IT decisions are made.

A second common aspect across these organizations is that they do not feel a large, immediate impact from the decline. Perhaps they are in a state of denial, or the effects have yet to ripple through the organization. In any case, if the economic decline continues through 2003, we believe several Extend the Lifecycle firms will be forced to take a more disruptive approach.

**Moving from Extend the Lifecycle to Maintain the Legacy**

None of the firms began as Maintain the Legacy, but some did progress to this approach after their other efforts to reduce IT expenditures did not suffice. When the economy began to decline the most common first step was to try to keep the current plan by stretching out the deadlines, and hence, expenditures (i.e., the Extend the Lifecycle approach). Following this, the next steps involved stopping initiatives and narrowing the horizon on expected benefits of new
systems (i.e., the Clean House approach). The result is implementation of smaller-scale systems with shorter-term anticipated pay-off periods, as opposed to large systems with future benefits. The next step has been to look for ways to lower costs, such as outsourcing select parts of IT operations—for example, the desktop environment. It is only when the IT budget must be further cut that the CIOs adopt the Maintain the Legacy approach.

Whereas CIOs taking the Extend the Lifecycle approach appear to assume a short period of decline, those taking the Maintain the Legacy approach seem to hope for a short period of decline. In essence, if the decline continues and the organization is not able to cut sufficient costs by canceling new projects and maintaining the legacy, the only remaining option might be outsourcing. As one CIO from a major manufacturing firm states, “If sales continue to go down and you cannot afford the overhead of the business, you eventually have to consider outsourcing.” However, none of the firms in our sample is currently considering a major outsourcing endeavor.

**Moving from Clean House to Bulletproof the Infrastructure to Extend the Lifecycle**

Although it might at first seem counter-intuitive, several firms did demonstrate a pattern of moving from the Clean House approach to Bulletproof the Infrastructure approach to Extend the Lifecycle approach. In fact, several of the firms currently in the Extend the Lifecycle quadrant had, prior to the decline, already undergone a major revision to the IS plan where they cancelled many projects (i.e., Clean House approach) and a subsequent focus on building the infrastructure. The impetus was the arrival of a new CIO from the outside who faced an IT organization with a poor reputation for projects that had gone over budget and had failed to deliver the anticipated results.

All of the Clean House firms saw the economic decline as coming at a fortuitous time because they had lost control of their IT planning process and their application portfolio. It was high time to rethink the planning process and the content. None of these firms intend to remain in the Clean House state, though. Their goal is to use it to develop a new IT plan aligned with the organization's strategy, with a solid infrastructure that can support growth. Hence, we see evidence of firms aspiring to move from Clean House to Bulletproof the Infrastructure. But rather than simply initiate infrastructure projects, they believe it is important to first lay out a new long-term IT strategy that envisions the applications that will run on the new infrastructure. In effect, these firms are preparing themselves not only for growth but also positioning themselves to weather the next decline. During that decline, we would expect them to simply need to extend their lifecycle.

**The Ups and Downs of Managing IT**

Our research has addressed the question of how CIOs manage IT during economic decline. We have described four approaches to managing IT during periods of economic decline. Our interviews show a pattern of managing IT during periods of economic growth and decline (see Figure 3).

Specifically, all the organizations in our study faced common issues during the 1990s growth period. Rapid organizational growth fueled the need for new systems. Often, IT was unable, or perceived by business units to be unable, to sustain the rapid growth. So the business units went to third-party developers. Meanwhile, IT focused on large systems (often ERP) aimed at improving organizational efficiencies. With both inside and outside development taking place, the organization ended up with a complex array of systems built on various platforms and with little integration of data or systems. Moreover, the swift growth left little time to focus on infrastructure issues. More often than not, the large systems went well over budget and were late, leading to dissatisfaction with the IT department and, in some cases, replacement of the CIO.

At the start of the economic decline in 2000, most of the IT organizations in the study had a multitude of new systems, many on outdated infrastructure platforms. Some have chosen to maintain that platform until the good times return; others have decided to rebuild their infrastructure, anticipating good times ahead. On the applications side, some are using the downturn to scrap and reconstruct their strategic plan. Others are lengthening their plans.

**Lessons from This Study**

Given that economies move in cycles, can we draw lessons from the current cycle that CIOs can use to manage during future growth-decline cycles? We think three lessons are enduring.
Lesson 1: Disciplined IT Decision Making Evens Out IT Ups and Downs

When organizations follow a structured, disciplined approach to IT decision making, regardless of the current financial situation, they even out demands on the IT organization. Business demands and IT spending tend to move in concert with the economy. Employing a practical and responsible approach to IT spending during periods of prosperity more likely ensures that an organization’s IT strategy will not be drastically affected during periods of economic decline.

In the 1990s, some IT organizations chose to hire contract consultants and offshore developers to help keep pace with the high demand for new IT systems. Organizations that either ignored or abandoned their established IT project selection and approval practices during those fat 1990s then found themselves left with numerous projects in various phases of development when the economic growth began to decline and IT funding dwindled. Facing a declining or static IT budget, organizations once again “re-instated” or formalized procedures to ensure that funding only went to IT projects directly aligned with the organization’s business strategy.

Many of the negative impacts from the economic downturn could have been moderated if organizations had adhered to a rigorous, structured IT planning and strategic decision-making process.

Lesson 2: Regular IT Strategic Reviews Build Business-Aligned Portfolios

Organizations that fail to perform a regular review of their projects compromise their systems development portfolio. It’s during periods of economic growth when organizations are most likely to be so focused on staying competitive in their marketplace that they approve IT projects regardless of their alignment with the organization’s business strategy. This laxity can decrease the performance of the organization, almost immediately, because these projects take resources away from projects that have strategic value.

This misappropriation of IT resources may artificially extend the time to complete key IT development pro-
projects. But it is not until the organization experiences a declining economy that it discovers it has been supporting IT projects that are not aligned with its strategic plan. That’s when top management typically reviews the IT project portfolio and weeds out projects that do not support current and future strategic goals—either placing them on hold or canceling them.

Although it can be financially painful to absorb the costs of cancelled IT projects, the exercise can renew top management’s commitment to managing the alignment between business and IT strategies. In truth, though, such reviews should take place no matter the economic environment.

**Lesson 3: Balanced IT Spending Yields Business Agility**

Organizations need to balance their IT spending among new systems development, maintenance, IT infrastructure, and integration projects. Unfortunately, very few management teams approve funding for IT infrastructure and integration when these projects conflict with new development, even though the executives know they need a flexible, scalable, and fully integrated enterprise-wide IT architecture. During periods of business prosperity, this unbalanced funding tendency is even more pronounced. The majority of IT funds are spent on new development, in hopes of improving competitive performance.

The result is new kinds of hardware and software being continually added to the IT infrastructure, with little consideration for how they will affect operating performance or whether they can share information across platforms.

Only when the economy slows down do organizations realize their unbalanced spending has led to an unstable IT infrastructure. To remedy this situation, management must allocate a significant portion of the IT budget to IT infrastructure projects. New development projects that might provide competitive advantage in a down economy must be delayed until a stable and fully integrated IT environment is in place.

Organizations that balance funding between new systems development and infrastructure are better placed to take advantage of business cycles. They are more agile.

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**Conclusion: CIOs Must Be Able to Facilitate Change As Their Environment Changes**

In conclusion, our study found that some CIOs change their approach to managing IT as various economic and organizational changes occur. Such fluid movement through the four approaches demonstrates that CIOs must have the flexibility to modify IT strategy to meet changes in the business environment.

Continual change is now inherent in IT strategy development. Instead of developing an IT strategy and “selling” it to management, CIOs now need to facilitate solutions and assist business unit executives in locating the IT tools to integrate diverse solutions to form a cohesive working organization. Only then will IT strategy align with business goals during both the good times and the bad.

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