

Getting a Return on Your Information Technology Investment

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One of the most vexing challenges senior executives face is getting an attractive return on their information technology investments. They already recognize that information technology can fundamentally change their businesses – redefining their economic structures, product values, and customer/supplier relationships. Increasingly, leading corporations are mentioning information technology in their vision statements. A key element in Coca-Cola’s recent vision statement, for example, was „construction of leading information systems.“

But these same senior executives are clearly frustrated by their inability to get an acceptable return on their escalating information technology investments. Symptoms of this problem typically include:

- Rising information technology budgets with no apparent benefit
- Inflexible, late, and costly information technology responses to business changes
- Unstable information technology resources

The information technology dilemma is best illustrated by a startling statistic: According to the U.S. Bureau of Labor Statistics, in the 1980s, despite huge increases in information technology spending, the productivity of U.S. office workers grew only 1 percent annually.

The challenge of getting a return on information technology investments is not new. What is new is the availability of technology with unprecedented functionality at affordable prices, the improvement in technology literacy, and the focus on rethinking strategic processes. Combined, these factors provide an unprecedented opportunity for senior executives to address the information technology challenge.

In our recent experiences with several leading corporations, we have found that successful approaches include three aspects:

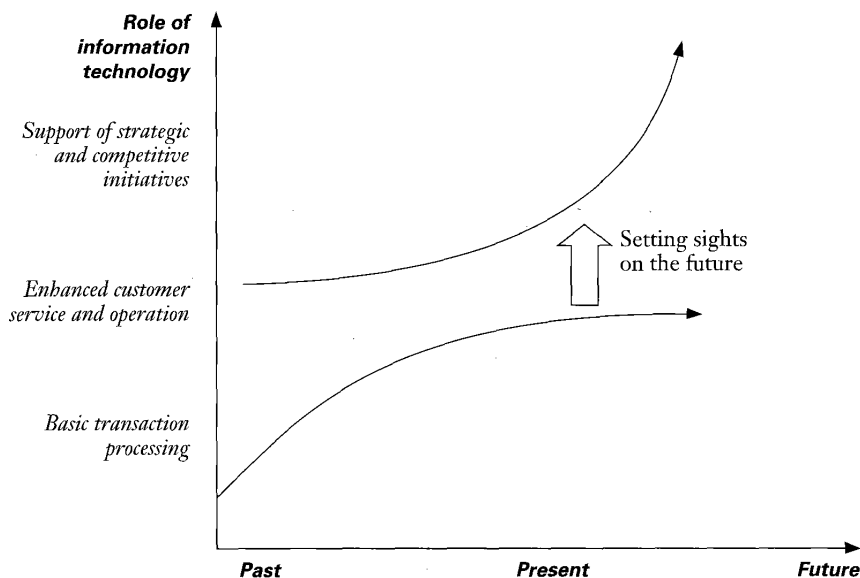
- Future-focused baselining
- Change agents
- An information technology blueprint for the 1990s and beyond

Future-Focused Baselining

Baselining means comparing your own capabilities with those of competitors and with accepted best practices. By *future-focused baselining* we mean developing an understanding of your current information technology, not as a static, quantitative exercise but as a future-focused activity. Future-focused baselining helps your organization understand your current technology as a platform for change (Exhibit 1).

Exhibit 1

Future-Focused Baselining

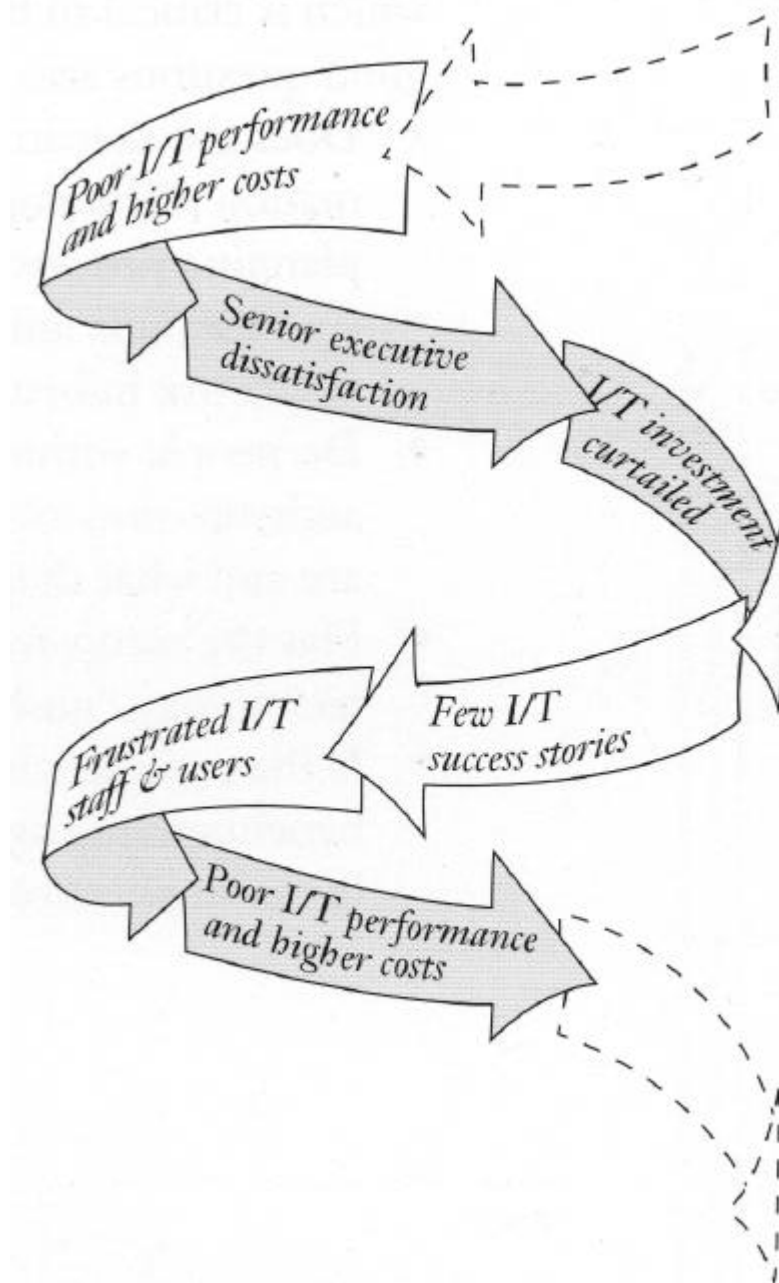


For many companies, the most powerful incentives for undertaking future-focused baselining is the need to break the information technology death spiral: a self-perpetuating pattern of actions that leads to poor information technology performance (Exhibit 2). The information technology death spiral reveals how tightly connected are the broad dimensions of the information technology activities – technology, organization, and processes. This is why improving the return on your information technology investment requires decisive, broad-based actions – not tinkering with isolated parts.

An example of how *not* to break the information technology death spiral is the case of a leading entertainment company. This firm had long suffered from an inability to complete projects to senior management’s satisfaction. Because information technology projects were the obvious problem, senior management focused on fixing the software development process – neglecting to address issues related to people, processes, or future-oriented technology. The result of this piecemeal approach has been that while the company has realized short-term improvements in software projects, senior management is still lamenting the lack of return on its information technology investment. In short, the company is still entangled in the information technology death spiral.

Exhibit 2

The Information Technology Death Spiral



Breaking free of the death spiral requires taking a hard look at both the present and the future. Critical elements of future-focused baselining include asking provocative questions and highlighting competitive activities.

Asking Provocative Questions. Questions based on the best practices of leading users of information technology can help introduce a change mentality, which is critical to the baselining activities. Some good questions are:

- Does the executive management team view information technology as a key issue in the business planning process?
- Can business units take responsibility for their respective information futures?
- Do people within the information technology activities understand who their stakeholders are and what their satisfaction attributes are?
- Has the company created a productive information technology „push-pull“ environment?
- Is the company investing in competitive benchmarking as a way to actively seek new and better applications of information technology?

Competitive Benchmarking. Here we do not mean the exhaustive, quantitatively driven approach inherent in TQM programs. In future-focused baselining, competitive benchmarking is a simple exercise of comparing the information-technology-enabled capabilities (not the underlying technology) of your strategic processes against those of key competitors and „best-in-class“ companies. This exercise reveals both deficiencies and opportunities and stimulates a lively, future-oriented discussion.

We never cease to be amazed by how few companies go through the process of organizing publicly available information that tells a story about their use of information technology and highlights the areas that need change. For those who do, the exercise is rewarding. One leading international pharmaceutical and chemical company benchmarked the information technology activities of its R&D department against those of its competitors. When the company examined the key process of delivering external scientific information to researchers and scientists, it was startled to learn that leading competitors were adopting the information technology tactics of the commercial information industry. Such tactics, it realized, would radically alter the cost, timeliness, and usefulness of scientific information. The company quickly abandoned its leisurely „continuous improvement“ mentality in favor of fundamentally rethinking its approach to scientific information delivery and retrieval.

Change Agents

Future-focused baselining provides the impetus for change. However, in most organizations, achieving fundamental change is difficult at best. We have observed that the companies that have successfully transformed their information technology activities to achieve higher returns on their investment use change agents to shape this process. The change agents used most successfully are aggressive, information-technology-literate senior managers and new approaches to conceiving, managing, and delivering information technology.

In our experience, every successful effort to transform information technology has relied on these change agents.

Senior Managers. The most visible change agents are members of senior management. They must provide more than passive support. Changing the information technology equation requires a new tempo and style of information technology leadership. While the senior information systems executive has an important role, information technology leadership must come from the business itself, not from the Information Systems Department.

Putting business-friendly technology in the hands of information-technology-literate employees is easy. Using it to change the way work is done demands aggressive information leadership. Senior business leadership must actively promote and work toward a „push-pull“ environment, „pulling“ the use of information technology into most business activities, while the Information Systems Department „pushes“ information technology resources into the business. Achieving the „push-pull“ environment requires the company’s total involvement in applying information technology. It has to inject the information technology perspective into such normal business activities as:

- Establishing business policy and strategy
- Determining investment allocations
- Developing corporate vision statements
- Nurturing key staff skills
- Implementing important business initiatives

To provide this information technology perspective, senior business leadership must be information-technology literate. This does not mean senior managers must be expert in the underlying technologies. Rather, they must understand intimately how the capabilities of information technology can change the way work is done. An excellent example of aggressive, information-technology-literate business leadership is the CEO of one of the fastest-growing U.S. supermarket chains. Even though he did not personally use information technology or understand its technical details, he showed a keen interest in how information technology could change the supermarket business. He investigated key technologies such as scanners, appointed up-and-coming managers to lead important information technology projects, and infused new leadership and skills into the Information Systems Department to capitalize on emerging technologies. As a result, the supermarket chain is pursuing an aggressive expansion program based on information technology advances that allow the business to offer new services to an expanded customer base.

New Approaches. Client/server technology represents a fundamental revolution in information technology. Essentially, client/server technology uses networked personal computers to provide greater functionality and information at less cost than once provided by mainframes. We have demonstrated in a number of client engagements that properly applied client/server technology is cheaper, more responsive, and business-friendlier than traditional mainframe technology. However, coupled with increased employee information technology libraries, the client/server revolution requires new ways of conceptualizing, managing, and delivering information technology.

This change includes dramatic shifts in:

- Information technology roles and responsibilities – from Information Systems Department focus to organization-wide involvement
- Applications development – from built-in systems to assembling reusable system components
- Technology utilization – from the „glass house“ to the desktop and factory floor
- Information technology measurement tools – from technology performance to business contribution

An Information Technology Blueprint

Fundamental conceptual shifts such as the client/server revolution do not just happen. Companies that seize this opportunity actively manage the shift. A critical tool is the information technology blueprint. This blueprint establishes a cohesive mindset and a framework to ensure that all dimensions of the information technology equation come together. Developing an information technology blueprint is an „across-the-top“ exercise that addresses key new issues, not detailed project plans. It is a short-burst, business-driven activity.

Robust information technology blueprints address four key areas:

- The information architecture
- The technology architecture
- The organization architecture
- The migration strategy

The Information Architecture. A company's information architecture is a picture of the information that management needs to run the company, i.e., the information that the information technology must deliver to the business. For example, most companies require information to manage the impact of strategic investments. More specifically, a mutual fund company requires information to ensure regulatory compliance.

Most companies lack this simple picture or are drowning in the details of complicated data models. For clarity and completeness, the information architecture should be organized around function and type of information. It should include all key stakeholder information needs (Exhibit 3).

The Technology Architecture. The technology architecture describes the hardware, software, and communications requirements of the future. Since technology evolves rapidly, blueprint developers should keep the technology architecture at the capability level. They do not need to specify products or vendors, which is best done during technology acquisition.

They should also bear in mind that technology should not be tied to specific projects or activities, but should perform specific functions while providing an infrastructure that allows any person to access and use any information from any place – within reasonable limits.

Exhibit 3

The Information Needs Matrix

	<i>Develop products</i>	<i>Serve customers</i>	<i>Manage vendors & partners</i>	<i>Market products</i>	<i>Manage human resources</i>	<i>Manage finances</i>
<i>Strategic</i>				Understand the customer <ul style="list-style-type: none"> • <i>General profile</i> • <i>Market area information</i> • <i>Customer-specific information</i> Determine product portfolio <ul style="list-style-type: none"> • <i>Historic sales information</i> • <i>Sales trend</i> • <i>Customer feedback</i> • <i>Product profitability</i> 		
<i>Planning & analysis</i>				Analyze competition <ul style="list-style-type: none"> • <i>Advertising</i> • <i>Price</i> • <i>Products</i> Establish marketing plan <ul style="list-style-type: none"> • <i>Media information</i> • <i>Geographic market information</i> 		
<i>Monitoring & controlling</i>				Monitor marketing effectiveness <ul style="list-style-type: none"> • <i>Customer feedback</i> • <i>Sales trend</i> 		
<i>Operational</i>				Communicate with customer <ul style="list-style-type: none"> • <i>Suggestions/complaints</i> • <i>Customer-specific information</i> • <i>Special request</i> Conduct marketing program <ul style="list-style-type: none"> • <i>Product information</i> • <i>Vendor information</i> • <i>Contract terms and conditions</i> 		

The technology architecture provides an „enabling infrastructure“ perspective, addressing the critical issues of weaving the various technology components into an infrastructure and leveraging the installed technology base while new components are built in. Most companies have an installed technology base that functions satisfactorily (e.g., accounting and production control). Reinventing the installed base wastes investment funds and management attention. Instead, technology architecture should encapsulate the installed base, using client/server technology to add functionality to existing mainframe-based systems. Using this encapsulation approach, for example, a company could transform a transaction-oriented processing system into a customer service system.

New systems should be developed by building and assembling software components, not by developing a unique system for each function. Typically, a system is a collection of related activities that, working together, perform a certain function. Many of these activities – for example, retrieving a customer address – are performed in more than one system. The technology architecture should support an applications development process that builds inventories and assembles these reusable components. Companies that have adopted this approach are building systems cheaper, faster, and with fewer errors.

The Organization Architecture. Establishing the „push-pull“ environment requires creating new organization-wide roles and responsibilities. An organization architecture defines information technology roles and responsibilities for key areas of a company. The RAEW (Responsibility, Authority, Expertise, Work) matrix is an effective tool for accomplishing this redefinition (Exhibit 4).

Exhibit 4

The RAEW Matrix: Responsibility, Authority, Expertise, Work

Activity	Participant											
	Policy group	Steering committee	Business unit heads	Agenda champions	Business info. managers	User project managers	Chief information officer	Service delivery manager	Systems delivery manager	Business redesign services	Technology architecture dec'ns	Strategic technology mgmt.
Establish business policies	R A E W											
Develop business strategy			R A E W									
Approve business strategy	R A E W											
Develop I/T strategy		R A		E W E W		E W E W	E W E W	E W E W	E W E W	E W E W	E W E W	E W E W
Approve I/T strategy	R A E W											
Develop I/T tactical plans					R A E W	R A E W	E W E W	E W E W	E W E W	E W E W	E W E W	E W E W
Recommend investment allocation		R A E W	E W			R A E W	E W E W	E W E W	E W E W	E W E W	E W E W	E W E W
Approve investment allocation		R A E W				R A E W	E W E W	E W E W	E W E W	E W E W	E W E W	E W E W
Define I/T standards & policies		R A E W	E W									
Design architectures (data/technology)			E W			R A E W	E W E W	R A E W	R A E W	R A E W	R A E W	R A E W
Define projects				R A E W			E W E W	E W E W	E W E W	E W E W	E W E W	E W E W
Prioritize projects		R A E W	R A E W		E W		E W					
Monitor/assess emerging technologies								E W	R A E W	E W	R A E W	R A E W
Promote business-I/T partnership		R A E W	R A E W	R A E W	R A E W		R A E W	E W E W	E W E W	E W E W	E W E W	E W E W
Facilitate workstation computing			R A E W		R A E W			R A E W	E W E W	E W E W	E W E W	E W E W
Monitor competitive I/T uses		E W E W	E W E W	R A E W	R A E W		E W E W	E W E W	E W E W	E W E W	E W E W	R A E W
Implement infrastructure projects				R A E W				E W E W	E W E W	R A E W	R A E W	R A E W
Implement applications architecture					R A E W	R A E W	E W E W	E W E W	R A E W	E W E W		
Monitor/assess progress on projects		R A E W	R A E W		R A E W	R A E W	R A E W	E W E W	R A E W	E W E W	E W E W	
Operate technology							R A E W	E W E W	E W E W		E W E W	
Manage security							R A E W	R A E W	R A E W		E W E W	
Create I/T awareness in the business		E W E W	E W E W	E W E W	E W E W		R A E W			E W E W	E W E W	E W E W

One particular role requires special attention, given its impact on the organization. This is the business information manager, a technology-savvy business person responsible for integrating information technology into every facet of the business. An effective business information manager is critical to the process of shifting information technology leadership from the Information Systems Department to the business. The department's role changes from the primary center of information technology responsibility and activity to a systems and service delivery organization. Like any external systems-integration company, the redefined Information Systems Department now provides a specified range of infrastructure, operations, and systems development services required by the business at designated performance levels, e.g., price, delivery time, and quality (Exhibit 5).

While the organization architecture is used to define and drive information technology decisions and actions, we recommend that companies also develop a set of information technology management principles to ensure effective and consistent organization-wide decision making. Such principles might include:

- There is no such thing as an I/T project, only business projects.
- Our I/T organization serves no other purpose than to satisfy its customers (end-users) and their customers.
- Every major project will start with a business process rethinking phase.

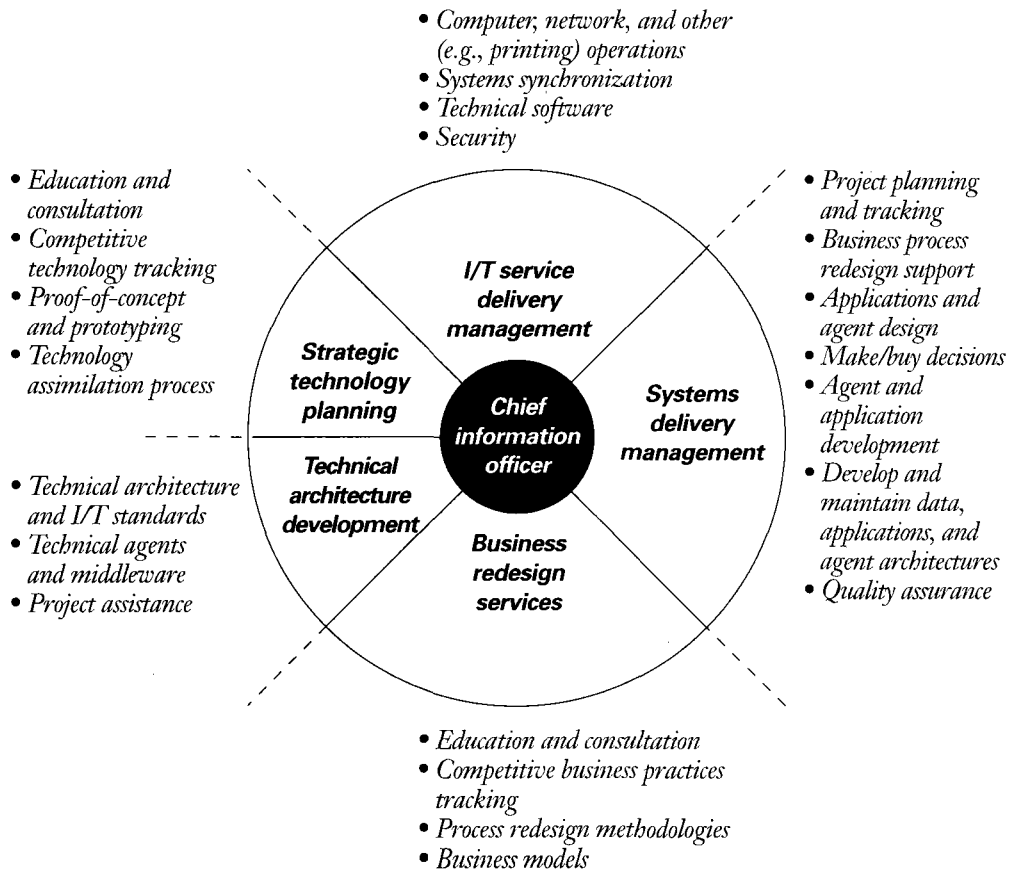
The Migration Strategy. Moving from an existing environment to the architectures defined by the information technology blueprint is an evolutionary process that requires a migration strategy to set the direction, drive the action, and measure progress.

Setting a direction means knowing what to do next, not working out all the details of a particular project. The migration strategy defines projects, sequenced according to their business priority, that implement the information, technology, and organization architectures. Typically, the initial phase of the migration strategy includes high-visibility development projects designed to highlight the information technology blueprint.

The migration strategy should drive the action. Senior business leadership should not view developing the information technology blueprint as a sequential planning and implementation activity. Rather, they should incorporate information resources into the information technology blueprint so that as changes become evident, implementation teams are formed to begin the work. This fast-track approach to planning and implementation furthers the implementation of the architectures. We have seen several companies build prototype systems that encapsulate existing systems with client-server technology to bring the technology architecture to life and motivate further changes.

Exhibit 5

The Redesigned Information Systems Department



Implementing the information technology blueprint is an inexact science driven by practical business realities. A company can nevertheless measure its progress by identifying and monitoring a series of milestones directly tied to major architecture changes and events. These milestones should be significant, widely recognizable throughout the company, and business-oriented. For example, establishing the business information managers is an early milestone, while applying client/server technology is typically a later milestone.

The Reward

There is no quick-and-easy way to achieve higher returns on technology investments. The required changes are significant – but so is the reward. Here are some tangible examples:

- A prominent teaching hospital, guided by aggressive I/T leadership, implemented a fully integrated clinical and financial information database that allowed the hospital to reduce its insurance billing staff by 90 percent.
- A major international trucking company made targeted use of daily executive-level productivity and profitability information to deliver 20 percent more less-than-truckload tons with only 3 percent more employees.
- A dominant regional retail bank, facing a very unstable banking and economic environment, installed a ubiquitous ATM network, which it used to generate fee income across a diverse customer base, allowing the bank to maintain a positive

earnings and capital position.

- A top mutual fund, driven by senior management, installed a systems infrastructure to handle asset growth of 333 percent over five years – and was cited by *Business Week* as one of the top ten customer-oriented companies in the United States.

As these examples demonstrate, business leaders can seize the opportunity offered by the client/server revolution to transform their information technology activities – and achieve higher returns.

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