The 1990s have been a time of great advances in information technology. So why are companies struggling with their systems more than ever before?

Many are burdened with costly and unduly complex legacy systems. Others have business and IT organizations that can’t – or won’t – talk constructively with one another. Still others are at a loss about where to invest to get the functionality they so desperately need.

As Casey Stengel asked at a different time, in a different place: “Can’t anybody here play this game?” The answer is yes – some companies really can play the IT game. The results of a recent study* reveal that there are indeed a number of companies that have gained control of IT and are using it to deliver real value to their business.

* Industry interviews by Microsoft and McKinsey.
1. MAKE IT A BUSINESS-DRIVEN LINE ACTIVITY, NOT A TECHNOLOGY-DRIVEN STAFF FUNCTION

2. MAKE IT FUNDING DECISIONS LIKE OTHER BUSINESS DECISIONS – ON THE BASIS OF VALUE

3. DRIVE SIMPLICITY AND FLEXIBILITY THROUGHOUT THE TECHNOLOGY ENVIRONMENT

4. DEMAND NEAR-TERM BUSINESS RESULTS FROM DEVELOPMENT EFFORTS

5. DRIVE CONSTANT YEAR-TO-YEAR OPERATIONAL PRODUCTIVITY IMPROVEMENTS

6. BUILD A BUSINESS-SMART IT ORGANIZATION AND AN IT-SMART BUSINESS ORGANIZATION
The research shows that what distinguishes these companies is not technological wizardry, but the way they handle their IT activities. In fact, they manage IT in much the same way that they manage their other critical functions and processes: by getting real leadership at senior levels, by making IT speak business English, and by focusing IT work on delivering business value.

Underlying the success of these companies are six basic principles shared by IT-smart organizations:

- Make IT a business-driven line activity, not a technology-driven staff function
- Make IT funding decisions like other business decisions – on the basis of value
- Drive simplicity and flexibility throughout the technology environment
- Demand near-term business results from development efforts
- Drive constant year-to-year operational productivity improvements
- Build a business-smart IT organization and an IT-smart business organization.

### High-performance IT principles in practice

<table>
<thead>
<tr>
<th>Principle</th>
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<th>…not this</th>
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<tbody>
<tr>
<td>Make IT a business-driven line activity, not a technology-driven staff function</td>
<td>Line managers on the hook for selecting, implementing, and realizing benefits of new applications</td>
<td>IT running the new application efforts with low-level business involvement</td>
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<td></td>
<td>IT is the line manager for providing cost-effective infrastructure to enable the applications</td>
<td>Infrastructure decisions diffused out into the new application decisions</td>
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<td>Make IT funding decisions like other business decisions – on the basis of value</td>
<td>Require thorough business cases and review them</td>
<td>Allow pet projects and box-checking project justifications</td>
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<td>Develop business judgment about IT decisions</td>
<td>Treat IT as black box</td>
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<td>Focus on value creation</td>
<td>Concentrate on IT cost reduction</td>
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<td>Drive simplicity and flexibility throughout the technology environment</td>
<td>Establish standards centrally – and enforce them</td>
<td>Allow each user to choose the “best” technology</td>
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<td>Select technologies conservatively</td>
<td>Try anything once</td>
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<td>Use packaged software where possible</td>
<td>Heavily customize packaged software</td>
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<tr>
<td>Demand near-term business results from development efforts</td>
<td>Use business-driven 80/20s for custom development</td>
<td>Try to do everything in custom development</td>
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<td>Monitor projects relentlessly against milestones</td>
<td>Accept significant overruns</td>
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<td>Drive constant year-to-year operational productivity improvements</td>
<td>Create measures for all phases of your operations</td>
<td>Accept limited industry benchmarks</td>
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<td>Set aggressive improvement targets every year</td>
<td>Settle for “good enough”</td>
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<td>Build a business-smart IT organization and an IT-smart business organization</td>
<td>Build CEO knowledge by requiring involvement</td>
<td>Allow delegation of IT to staff</td>
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<td>Business-minded CIO as peer of senior management</td>
<td>Technology-minded CIO not involved in business decision making</td>
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<td></td>
<td>Filterate business people and business-literate IT people</td>
<td>Allow business people not to be involved in IT and IT people not to be involved in business</td>
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Though they may seem to be just common sense, these principles demand fundamental changes in the way many companies approach and manage IT (Exhibit 1). Moreover, concerted efforts are needed to get them all working together; no single one of them works well without the other five. Taken as a whole, they indicate that achieving IT success is less about overcoming technical challenges than about mastering IT management.

**Make IT a business-driven line activity, not a technology-driven staff function**

Because of the divide that still separates business and technical managers in most companies today, IT is often poorly linked to business strategies and to the day-to-day work processes that support them. The better companies are bridging this divide and doing a better job of integrating IT into business strategy development.

“The frequency and quality of our interactions with the businesses have dramatically increased. We fully understand the business strategy and corresponding IT initiative, and we’re starting to have terrific dialogues on how we can support the business and the corresponding IT challenges.”  

*Consumer products company CIO*

The evidence suggests that companies that perform better hold business managers rather than technical managers accountable for IT. This means business managers are responsible for selecting, implementing, and realizing the benefits of new applications. The IT organization works with the businesses to develop the applications and “owns” the technology infrastructure. But when things don’t work, it’s the business people that are held responsible.

“I vividly remember the change it made in our company when our new COO told us the businesses were responsible for IT. I really wasn’t sure what that meant until we had a large IT-related customer problem in one of our businesses. The business head and I were called to meet with the COO to discuss it. I grabbed all the facts available because I was expecting to be the one on the spot. We showed up and the COO turned to the business head and said, ‘I hear we have an IT problem. How are you fixing it?’ I started to answer, but he cut me off again by questioning the business head. We both got the message that now the businesses really own IT.”  

*Distribution company CIO*

With this approach, managers pay for what they really need because their budget and their credibility are on the line. As a result, they are much more focused on value, and less likely to make IT the excuse when strategies don’t work out. This responsibility makes them clearer about the problems they are tackling and the approaches that will solve them. Managers also make
faster decisions as they push for shorter deadlines and phased deliverables in the desire to see tangible payoffs as soon as possible.

Making line managers responsible for IT means that the IT organization supports development activities and is responsible and accountable for maintaining a cost-effective infrastructure. It also provides the crucial link between decisions made by individual line managers, thus ensuring that the sum of all the separate decisions works as a whole.

“We used to make a series of optimal one-off decisions that when taken together didn’t work. Now our infrastructure fits together and works.”

Pharmaceutical company technology director

For its part, senior management needs to know enough to carry on a dialogue with the IT organization and to ask the same penetrating questions it asks of other functions. This means the IT organization must speak business English instead of hiding behind technical lingo. It also means that non-IT managers must learn the basics and be willing to ask both smart and dumb questions. That way, IT and business people are able to assess each other’s performance and force corrections of any shortfalls.

Make IT funding decisions like other business decisions – on the basis of value

At most companies, IT is arbitrarily driven by last year’s IT spending and this year’s budget objectives. Some companies try a bottom-up approach and find that every project is important and that spending hits the ceiling. Others have difficulty managing cross-business tradeoffs. Still others hire a technology “savior” to make decisions for them, only to fire him or her and hire another at an even heftier salary when investments don’t deliver as planned. These companies tend to have trouble understanding the total business value of IT to their organization beyond its potential for cost reduction.

“We used to set a budget, but then when the business goes south a quarter or two into the year, we always cut back.”

Consumer goods company CIO

Evidence from interviews suggests that IT-smart companies treat major new IT investments like any other capital decision, blending softer business judgment with a rigorous approach to cost–benefit analysis that confers discipline and thoroughness. Most important, they bring a maturity of business judgment to the investment process that helps them recognize and understand the less certain, less quantifiable, and more strategic aspects of IT investment decisions.
“It took us four years of working the process before we were getting the type of decisions we wanted.”  
Transportation company CIO

Companies that fail to build this maturity of judgment often find themselves making IT decisions merely on the hard-cash benefit of cost reduction.

“Our executives have no difficulty in deciding when to upgrade the first-class lounge. We need to build the same maturity for soft IT decisions.”

Airline CIO

One way to get around the problem of quantifying the benefits of highly uncertain but strategically promising projects is to take an R&D approach and run small-scale tests. For many IT organizations, this will appear daunting, because some of the projects are bound to fail.

“At first, it was tough to run test projects; we had a mindset that everything must work, and it was tough for us to cut our losses on the failures. Now we take it for granted, and while we strike out from time to time, we also hit home runs.”

Retail CIO

IT-smart companies also think beyond individual projects to longer-term goals for applications and infrastructure. In these companies, IT is formally considered in the strategic planning process, and the IT organization looks not only at the current slate of projects in development but also at the strategic needs of the company for the next three to five years. At the operational level, spending is measured against stringent cost and service targets. The data center, networks, and operational infrastructure are thought of as a factory beset by constant demands for productivity improvement.

Finally, IT-smart companies avoid “boom and bust” spending patterns, striving instead for constant renewal of their systems and consistent year-to-year spending. This helps maintain their IT skill base and prevents the inefficiency that comes from ramping up and down.

Senior managers must realize that IT decisions, like those in other functions, require judgment. The only way to acquire judgment is through experience. Companies that fail to get their business managers involved with IT and instead hire and fire a string of CIOs will be slow to develop the decision-making maturity they need.

Drive simplicity and flexibility throughout the technology environment

Plenty of companies preach standardization; fewer are able to make it stick. Many have a hodgepodge of applications from separate developments or
various acquisitions they have made. More than one basic system may be in place for things like e-mail or billing. The result is complex and inflexible application portfolios and technology infrastructures.

“We're the proud owners of one of everything. We have 111 categories of technology and two to four technologies per category.”

*Energy industry CIO*

IT-smart companies drive simplicity and flexibility throughout the technology environment by setting architectural standards and closely scrutinizing the true costs and benefits of exceptions. They tackle complexity by reducing the number of technologies and platforms they deploy and by designing architectures to increase the flexibility and ease of implementation. And they take into account commercial aspects such as industry standardization and the likely future support of technologies because of the enormous costs of obsolescence.

But the forces resisting simplification are strong. Most IT organizations lack the power they need to force their companies to adhere to architectural standards. In one oil company that has achieved substantial cost savings and efficiencies from standardization, the CIO acknowledges that he “just couldn't have done it without the CEO stepping up.”

Exceptions to architectural standards will exist for high-value applications, but some of the smarter companies have developed effective approaches for managing these, too.

“We outsource the operation of unique technologies. That way we really understand its cost and can limit its complexity impact on our systems.”

*Insurance company CIO*

Such companies also work hard at making systems more modular and the connections between systems easier and more standardized. This strategy has allowed them not only to develop and integrate new functionality and technology more quickly, but also to integrate disparate systems resulting from mergers, acquisitions, or reorganizations.

“After a big merger, we were able to integrate the core transaction systems in a couple of weeks. This was entirely a result of our middleware architecture.”

*Commercial bank CIO*

Making systems more modular and flexible also means putting more strategic thought into database structures. Working out exactly what the business will need from its data is vital, and starts with the mundane but important process of determining the core data factors that are at the heart of the business,
such as what you record in your purchase orders and how you bill your customers. Determining the right amount of data to collect is critical: too little, and it becomes impossible to understand key dimensions of the business; too much, and the data becomes unwieldy.

The companies that do get the data right often reap competitive rewards. Many IT-smart companies can, for example, determine what their profitability is by product, customer, or transaction, and use that information to drive competitively advantaged actions.

“Our competitors are indiscriminately mass-bombing all the channels and chains, while we win by going heavy only on those where it pays to do so, and finding other actions in those that have little or no payoff.”

Consumer goods CIO

The upshot is that, like it or not, top management have to make some decisions about standards, technologies, and even data structures. That doesn’t mean they have to get involved in details, but they must be prepared to enforce adherence. When decisions cross countries and lines of business, top managers may also have to adjudicate tradeoffs and help to uphold the right solutions.

Demand near-term business results from development efforts

Almost all companies struggle with the project management challenges of applications development.

“We have a hard time tracking projects, let alone measuring their performance. We have more than 1,000 projects going. What will happen to my 18,000-PC rollout if the network schedule slides?”

Transportation industry CIO

IT-smart companies use a phased delivery strategy to avoid the wholesale replacement of outmoded IT systems. This step-by-step approach upgrades systems in small pieces rather than in a “big bang” delivery at project’s end. The best companies typically make sure projects have deliverables every 90 days.

“I want the strong culture of 90-day deliverables in the business side to be transferred to the IT organization.”

Software company CIO

Such an approach builds buy-in and momentum as users quickly see real payoffs. The best companies also leverage proven packaged software wherever possible and keep customization to an absolute minimum by changing their processes rather than the software. Not allowing the bad habits
of the past to be built into the software of the future is essential to success. A good rule of thumb is to customize packaged software only if it has a first-year payback of four times the investment in customization – an amount sufficient to cover hidden future costs.

When custom development is unavoidable or proprietary advantage is the goal, IT-smart companies focus on the 20 percent of the functionality that adds 80 percent of the business value. They then work to deliver 100 percent of that functionality quickly using such techniques as rapid business prototyping. They run small-scale tests of the business and IT changes and fix any problems created by customization while they are still manageable. They roll out the first round of changes as rapidly as possible and defer less valuable or more time-consuming changes until a later stage.

During the development process, IT-smart companies monitor major projects against milestones and projected business impact, and intervene when necessary. The focus on deadlines is intense and pervades the entire organization. Third parties are used to impose market-based discipline on the IT organization and to accelerate progress.

Once an application is deployed, IT-smart companies routinely audit completed projects and reassess their development practices. The lessons learned are then incorporated into these practices in future.

To make this approach work, senior managers have to learn enough about the functionality of software to ask tough questions of those who claim that standard functionality isn’t enough. They need to demand real evidence of why packaged software needs customization, and must be smart enough to know when that evidence isn’t there.

**Drive constant year-to-year operational productivity improvements**

Companies frequently underestimate what it takes simply to keep things running in IT. In many cases, less than one-third of IT spending goes on new applications; the rest is consumed by operations. Aggressive management of this area of the business can prevent operations and maintenance spending from crowding out new development.

“We manage our operations as though we are in an LBO situation: we have taken out 10 percent of the cost every year for the past five years on a volume-adjusted basis.” *Consumer goods company CIO*

If applications development is like product development, then running IT operations is like running a factory. As in a factory, IT operations include most of the round-the-clock and rapid-response aspects of IT: keeping the
And as in a well-run factory, the better IT operations measure performance against benchmarks and standards. Most IT-smart companies measure performance against benchmarks for data centers and wide area networks. Almost all have consolidated their data centers and are moving to consolidate servers. Most are either centralizing or outsourcing infrastructure support. But nearly all of them are struggling to develop good benchmarks for their distributed environment.

“I suspect we have too high a cost position in the distributed environment, but we just do not know what our costs are.”

*Insurance company CIO*

In many ways, the management of IT operations requires more managerial than technical skill.

“I’m not an IT guy; I used to run a factory. But the experience from my previous job was directly transferable.”

*Manufacturing company CIO*

Achieving operational excellence means top management must learn to see operations costs separately from new IT investments. While new investments should be treated as capital decisions, operations should be evaluated against stringent cost and service targets.

**Build a business-smart IT organization and an IT-smart business organization**

It is common enough for companies to have an IT steering committee and processes for integrating IT with the rest of the business. But this is a poor proxy for genuine involvement by the CEO and senior management. Evidence shows that the senior managers of better-performing companies create a lively debate about IT among both business and technical managers. Essential to this debate is the recruitment of individuals into IT who can bridge the gap between technology and business. Recruiting such people isn’t easy, though, and holding on to them can be even harder.

“Everybody’s after the same people. I can’t find the skills, and when I do I have a heck of a time retaining them.”

*Bank CIO*

Most IT-smart companies have a CIO who is a business manager first and a technologist second. In such companies, the CIO is a true peer of the rest of senior management. It may seem obvious to assert that the CIO must have senior stature, but in many companies the post still reports
to the CFO, increasing the likelihood that IT is seen as little more than a cost to be managed.

“I now report directly to the CEO. People used to ignore the CIO, but since I moved to the executive floor people stop by after meetings with the CEO to discuss real business and IT issues.” Financial services CIO

In better-performing IT companies, the IT and business organizations are closely integrated. The IT people are located alongside other line people and work closely with them on all initiatives.

“My IT organization is plugged into the business organization at every level and in every process. They know everything there is to know about the business.” Pharmaceutical company CIO

The business and IT organizations must work together to build the IT decision-making maturity necessary for success. This calls for some basic IT education for people in the business organization and some business education for those in the IT organization, but most of this education comes from on-the-job involvement in the decisions being made. The key is genuinely to engage the business people in project origination and implementation.

“When the business people first began really driving the IT project origination process, we had trouble debating with them well, and so we accepted every project and let resource constraints gate their delivery. But with joint learning we now ‘rack and stack’ the projects and really make joint business value and IT capability tradeoffs.” Bank CIO

IT-smart companies have simple structures in their IT organizations. Support staff positions are few, and the focus is on performance. These organizations realize they can't keep up with all the technological skills they will need, so they retain those where they have sizable or critical needs and outsource the less vital remainder. They make sure they maintain the key business process skills and are careful about access to those custom systems that deliver proprietary advantage so that knowledge doesn’t walk via contractors or vendors to competitors.

First, the diagnosis

For many companies, the difficult first step in putting all six principles in place will be to determine where they are in their current IT performance, and to identify the qualitative and quantitative measures that can be used to make this evaluation. An effective diagnosis will examine today’s spending – and the business impact of that spending – in the light of yesterday’s investments in applications, infrastructure, and organization. It will also be
informed by an understanding of the management processes that a company uses to set its strategic and technical direction and to fund, execute, and review its investments in IT.

Exhibit 2 shows how IT performance can be characterized in relation to an “abyss” into which many companies fall as they struggle to leverage their IT investments. Our research identified a range of performance: at one extreme are companies that are “frozen in the past” with old, inflexible infrastructure and applications, and at the other are companies that lead the field and gain real competitive advantage from their investments. Determining exactly where a company stands in this range of performance is essential to determining how and where to wring more value from both past and future investments in IT.

Getting the most out of your investments in IT calls for systematic action. It isn’t enough to put in place any one or two of the six principles; all must be set in motion simultaneously (Exhibit 3). It takes a sequence of changes, great discipline, and the building of shared business and IT maturity to get IT right. But over time, the benefits are enormous.

Some of the companies we spoke to had a few of the elements in place but were lacking one or two others. One financial services company had the support of senior business leadership, an ambitious vision, and clear business objectives for a major systems project. But it also had enormous complexity in its application architecture, and it had neglected to focus on near-term business results. As a result, it was behind schedule on many of its important projects and was failing to achieve the business payoffs it was seeking.

Contrast this situation with that of a basic materials company that focused on all six principles of successful IT (Exhibit 4). Over a three-year period,
this company was able to replace its entire order entry, inventory and manufacturing, and distribution systems. At the outset, replacing the aging legacy systems looked like an impossible task, but by targeting clear benefits and thoroughness to decisions. Don’t let cost reduction be the only focus of IT projects. Learn to apply business judgment to less certain, less quantifiable, and more strategic project decisions. Run small-scale tests of truly high-risk projects. Think beyond individual projects to longer-term application and infrastructure goals. Evaluate ongoing IT operations spending against stringent cost and service targets. Avoid “boom and bust” IT spending patterns; strive for constant renewal.

Even IT-smart companies must be vigilant to keep pace with rapidly changing technologies. But the IT challenge facing companies today is primarily managerial; technology alone cannot materially affect performance. Mastering IT management and leveraging IT for genuine strategic advantage
require discipline and maturity. They in turn demand that technology be tightly coupled with a cultural shift built on the IT literacy and leadership of senior management.

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**Exhibit 4**

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<thead>
<tr>
<th>One company’s approach to IT</th>
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<tbody>
<tr>
<td><strong>Example: Basic materials company</strong></td>
<td><strong>Make IT a business-driven line activity, not a technology-driven staff function</strong></td>
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<td></td>
<td>The CEO sponsored the effort and charged a senior line executive and the CIO with getting it done. A line director was moved over to head the project full-time and drive the overall effort. Although IT played a vital role, the business leaders were clearly accountable.</td>
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<tr>
<td><strong>Demand near-term business results from development efforts</strong></td>
<td><strong>Make IT funding decisions like other business decisions – on the basis of value</strong></td>
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<td>Funding of the effort was treated like any other major capital investment, with operational targets identified early on. Total spending was estimated at the outset, and funding commitments were approved annually by the board after full reviews of progress.</td>
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<td><strong>Drive constant year-to-year operational productivity improvements</strong></td>
<td><strong>Drive simplicity and flexibility throughout the technology environment</strong></td>
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<td>The company designed a simple architecture around core technologies that were well understood by the IT department. It created a set of architectural standards early on and used system integrators and contractors to build capabilities where gaps existed.</td>
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<tr>
<td><strong>Build a business-smart IT organization and an IT-smart business organization</strong></td>
<td><strong>Make IT funding decisions like other business decisions – on the basis of value</strong></td>
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<td></td>
<td>The company sought operational excellence not only in IT, but in business as well. It tracked both IT and business operations against a simple set of metrics to keep the organization focused on what was really important.</td>
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