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## **Don't Just Lead, Govern: Implementing Effective IT Governance**

**Peter Weill and Richard Woodham**

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## **CONTACT INFORMATION**

Center for Information Systems Research  
MIT Sloan School of Management  
3 Cambridge Center, NE20-336  
Cambridge, MA 02142  
Telephone: 617/253-2348  
Facsimile: 617/253-4424  
<http://web.mit.edu/cisr/www>

Peter Weill, Director	pweill@mit.edu
David Fitzgerald, Ass't. to the Dir.	dfitz@mit.edu
Jeanne Ross, Principal Res. Scientist	jross@mit.edu
Jack Rockart, Sr. Lecturer	jrockart@mit.edu
Chuck Gibson, Sr. Lecturer	cgibson@mit.edu
Chris Foglia, Admin. Officer	cfoglia@mit.edu
Julie Coiro, Admin. Asst.	julieh@mit.edu

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**Author:** Weill, Woodham

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**Abstract:** Firms achieving above industry average returns from IT investments must be making consistently better IT-related decisions. Effective IT governance is one of the ways these firms achieve superior returns. Many firms are creating IT governance structures that encourage the behavior leading to achieving the firm's business performance goals. We define IT governance as specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT. Effective IT governance requires careful analysis about who makes decisions and how decisions are made in at least four critical domains of IT: principles, infrastructure, architecture, and investment and prioritization. We studied the use of IT in large multi-business unit firms in the USA and Europe and found that the typical firm governs IT by following generally accepted guidelines with broad-based inputs and tightly controlled decision rights. However, top-performing firms governed IT differently with governance structures linked to the performance measure on which they excelled (e.g., growth). Designing an effective IT governance structure requires understanding the competing forces in a large organization and creating harmony among business objectives, governance archetype and business performance goals. An effective IT governance structure is the single most important predictor of getting value from IT. To help understand and design more effective governance, we propose an IT governance framework that specifies how decisions are made in the key IT domains. The framework harmonizes desired governance archetypes (i.e., monarchy, feudal, federal and anarchy) and a series of governance mechanisms (e.g., committees, approval processes and organizational forms). The framework is illustrated with effective IT governance at State Street Corporation. Effective IT governance encourages and leverages the ingenuity of all the firm's people in using IT, not just the leaders, while still ensuring compliance with the firm's overall vision and principles. In short, don't just lead, govern!



## Don't Just Lead, Govern: Implementing Effective IT Governance

Peter Weill – Senior Research Scientist and Director CISR, MIT Sloan School

Richard Woodham – Researcher CISR MIT Sloan School<sup>1</sup>

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### WHAT IS IT GOVERNANCE?

In recent years there have been spectacular failures of large information technology (IT) investments—major enterprise resource planning (ERP) systems initiatives that were never completed, e-business initiatives that were ill-conceived or poorly executed and new systems developed that were never used effectively. In contrast, some firms get above industry average returns from their IT investments year after year. These successful firms not only make better IT decisions, they also make better IT decisions consistently. These firms must have better IT governance—they have the right people making IT-related decisions more effectively than their competitors.

The average firm's IT investment is now greater than 4.2% of annual revenues and still rising.<sup>2</sup> This investment results in IT exceeding 50% of the average firm's annual total capital investment. As IT has become more important and pervasive, firms are increasingly challenged to manage and control IT to ensure value is created. In many firms, centrally managed IT is no longer possible or desirable. To address this issue, many firms are creating or refining IT governance structures to encourage the behavior that will lead to achieving the firm's business performance goals.

State Street Corporation, a world leader in providing services to sophisticated global investors, encompasses many businesses which continually identify client needs and create new products and services, usually heavily IT dependent, often leading their industry in time to market. To enable these businesses, State Street invests between 20 and 25% of total operating expenses in technology and technologists. Total 2000 revenues for State Street were over \$3.6b with an average revenue growth of 20% annually since 1996. Net income in 2000 was \$595m with an average growth of over 19% annually since 1996.<sup>3</sup> To maximize the business value from its IT investments, State Street has an Office of IT Governance whose role is to create and harmonize its IT governance mechanisms (e.g., committees, IT organization structure, approval processes) and ensure that value is created from its IT investments. Later in the paper we will describe how State Street redesigned its IT governance to enable a major change in the firm's strategy.

We define IT governance as *specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT*. IT governance applies principles similar to those for financial

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<sup>2</sup> Source: B. Gormolski, J. Grigg and K. Potter, "2001 IT Spending and Staffing Survey Results," Gartner R-14-4158, 19 September 2001. Includes both IT budget and "hidden" IT spending outside the IT budget.

<sup>3</sup> Source: State Street 2000 Annual Report.

governance (i.e., who is authorized to commit the firm to a contract or authorize a payment) to IT management. To achieve their goals, firms encourage particular desirable behaviors that exploit and reinforce the human, systems and intangible assets that comprise their core competency.<sup>4</sup> For example, in several of the firms we studied, the business objective of ‘sharing and reuse’ was achieved by encouraging the desirable behavior of ‘look within the firm first,’ and was evaluated with a targeted measure of performance (e.g., return on assets (ROA)). This behavior, together with the firm’s other desirable behaviors, should be encouraged by an IT governance structure incorporating all the major aspects of IT use including: IT principles, investment and prioritization, planning, infrastructure, applications development, architecture and payoff measurement and accountability.

To understand effective IT governance, we studied the use of IT in 40 large multi-business-unit firms in the USA and Europe and then analyzed the IT governance and financial performance of 24 of those firms using both interviews and questionnaires.<sup>5</sup> We found the most common pattern (i.e., the median) of IT governance follows generally accepted guidelines for corporate governance, which encompass broad-based inputs and tightly controlled decision rights. For ease of discussion we refer to this pattern as “the typical firm.” In contrast, top-performing firms had different governance patterns from the typical firms. The patterns of the top-performing firms were linked to the performance measure on which the firm excelled (e.g., ROA growth, market capitalization growth).<sup>6</sup> Designing an effective IT governance structure requires understanding and harmonizing many competing forces in a large organization. In our view an effective IT governance structure is the single most important predictor of getting value from IT.

To help understand and design more effective governance structures, we studied how firms made decisions in four key IT domains using a series of governance archetypes drawn from a political perspective (e.g., *IT Monarchy*). We investigated the implementation of these governance archetypes using a set of governance mechanisms (e.g., committees, approval processes, organizational forms).

## THE KEY IT DECISION DOMAINS

Effective IT governance requires careful analysis about who makes decisions and how decisions are made in at least four critical domains of IT: principles, infrastructure, architecture, and investment and prioritization. The four domains are highly inter-related but a firm often had different governance archetypes for the different domains.

IT principles are high-level statements about how IT is used in the firm. IT principles capture the essence of a firm’s future direction and how IT will be used.<sup>7</sup> For example, Citibank Asia continually seeks to ensure that a customer’s interaction with the bank is consistent regardless of location. This business

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<sup>4</sup> The concept of desirable behavior draws on the literature related to the competitive capabilities of firms. See for example: G. Stalk, P. Evans and L.E. Shulman, “Competing on Capabilities: The New Rules of Corporate Strategy,” *Harvard Business Review*, Vol. 70, March–April 1992, pp. 57–68.

<sup>5</sup> Data was used from the study of 40 firms entitled “Justifying & Funding IT Infrastructure,” the Results Research Project ITI, The Concourse Group, conducted by E. Birge, N. Wendt, P. Weill, M.L. Markus and others. Analysis by R. Woodham and P. Weill.

<sup>6</sup> The governance patterns of top performing firms described throughout this paper are all statistically significant and unlikely to be due to chance. The relationships were determined by correlating the governance pattern with a set of financial performance metrics for the previous three years. We are not suggesting a governance pattern caused high performance; instead we found high performing firms used atypical patterns of governance.

<sup>7</sup> For more details see: a.) M. Broadbent and P. Weill, “Management by Maxim: How business and IT managers can create IT infrastructures,” *Sloan Management Review*, Vol. 38, No. 3, Spring 1997, pp. 77–92; and b.) T. Davenport, T. M. Hammer, and T. Metsisto “How Executives Can Shape their Company’s Information Systems.” *Harvard Business Review*, March–April 1989, pp. 130–134.

principle is embodied in Citibank's long-held objective that "a customer going anywhere in the world is able to transact the same way." The opening of new delivery channels including electronic branches, PC and Internet banking and 24-hour, seven-day telephone banking has enhanced customer access. The resulting IT principles are clear: "The current technology thrust is the integration of existing systems to facilitate the delivery of products and services via electronic channels."<sup>8</sup>

IT infrastructure strategies describe the approach to building the IT foundation for the firm. IT infrastructure is made up of the shared and standard IT services that are centrally coordinated including the network, help desk, shared customer data, and shared and standard applications such as ERPs and customer relationship management (CRM) systems. Decisions about IT infrastructure strategy include requirements for infrastructure capability as well as the location of capabilities within the firm (e.g., firm-wide or business unit). IT infrastructure capability is a critical factor in determining the speed with which new business initiatives can be implemented. Citibank Asia's IT principles led to the establishment of a common IT infrastructure across the more than 10 Asian countries where Citibank operates. The shared infrastructure provides uniformity in back-end processing, the delivery of a common interface to customers, faster time to market and lower IT costs.

IT architecture provides an integrated set of technical choices to guide the organization in satisfying business needs. The architecture is a set of policies and rules that govern the use of IT and plot a migration path to the way business will be done. The architecture includes the standards and guidelines for technology, use of data, design of applications and change management processes necessary to exploit the new technologies. In Citibank Asia, architecture decisions were made to ensure that every Citibank access point is instantly recognizable, guaranteeing that the bank is "one mile, one phone call, or one click" away from anyone on earth.<sup>9</sup>

IT investment and prioritization covers the whole decision-making process of IT investment. This includes prioritization of where IT investments should be focused and describes the procedures for IT project proposals, justification, approval and accountability.

## **Governance Archetypes**

Drawing on existing work on corporate governance, state governance and information politics, we identified five IT governance archetypes: *business monarchy*, *IT monarchy*, *feudal*, *federal*, and *anarchy*.<sup>10</sup>

The senior leadership (e.g., CEO, CFO, COO) of the firm has decision rights in the *business monarchy*. These rights are often exercised within an executive committee or a similar mechanism. The CIO can be part of the group and is involved in decision-making, but will not act independently from the senior leadership. This comment from a senior IT executive in a major services organization explains the central role of the *business monarchy* in driving strategy: "We don't have an IT strategy, we have a business strategy; the CIO is part of the senior leadership team that sets the strategy." In the typical firm we found that *business monarchies* dominated decisions about IT investments and the IT infrastructure strategies.

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<sup>8</sup> For more information see: a.) A. Brand, P. Weill, C. Soh and P. Periasamy, "Citibank Asia Pacific: Positioning IT as a Strategic Resource" Melbourne Business School Case Study, 1999; and b.) Citigroup Annual Report 1998, p. 11.

<sup>9</sup> "Legacy Systems Under Strain," *USBanker*, May 1998, pp. 103–107.

<sup>10</sup> For an excellent discussion of the political perspective and the source of the archetypes see Chapter 5 of T. Davenport and L. Prusak, "Information Ecology: Mastering the information and knowledge environment" Oxford University Press, 1997.

The CIO individually or groups of IT executives have decision rights in the *IT Monarchy*. These rights are often exercised within the various IT steering committees and the IT organization. The CIO of a large manufacturer commented on the IT Monarchs' control of the infrastructure: "IT has real power in networking based on architecture and standards." In the typical firm, the *IT monarchy* had the decision rights for IT principles and IT architecture.

The business unit leader or his or her delegates have governance rights in the *feudal* archetype. The mechanisms for exercising these governance rights are localized and include the authority of the business unit leader and the budgeting process. *Feudal* approaches are often adopted in organizations with relatively autonomous business units operating in non-complementary markets and result in the princes and princesses of each fiefdom optimizing their local needs. In the typical firm the *feudal* structure did not control decision rights for any of the four domains. However, in top performing firms, as measured by market capitalization growth, *feudal* structures were used for infrastructure decisions, thereby maximizing local responsiveness.

In the *federal* structure, governance rights are shared by some combination of senior executives, business unit leaders, business process owners, IT executives and end users. Mechanisms designed to exercise *federal* governance rights include firm-wide business process teams, service level agreements, IT investment approval processes and IT working committees. We found that the *federal* approach was often used for input rights but less often for decision rights. As this senior IT executive at a process manufacturer explains, *federal* structures are sometimes difficult: "The governance board includes the corporate controller, eight domestic CIOs who happen to be mostly senior and seasoned and three regional CIOs from Asia, Europe, Latin America. The board has been meeting for a year, but it is viewed as dysfunctional by anyone who has been at the meetings. No one pays attention or takes it seriously."

Individual business process owners or end users have decision rights in the *anarchy* archetype. There are no formal mechanisms for exercising rights in an *anarchy* with decisions made locally on an ad-hoc basis. All firms have elements of *anarchy*. Top performing firms, measured by market capitalization growth, typically use *anarchy* governance for IT principles ensuring very localized optimization with little regard for sharing or standardization.

## HOW FIRMS ACTUALLY GOVERN IT

Firms governed IT very differently depending on a number of factors including: the predominant role for IT, which performance metrics were important, and the degree of deliberate design (rather than no design) of IT governance. We will first look at IT governance at the typical firm and the mechanisms it used. We will then describe IT governance at top-performing firms as well as at firms where IT had different roles (e.g., cost focused).

### **Typical Firm**

In analyzing both the inputs to decisions and the decision makers, we found that the firms in the study often had different governance archetypes for different IT domains. The diagram in Figure 1 shows the percent of the firms with each IT governance archetype in each IT domain. The dark shaded boxes summarize governance structure for the typical firm (i.e., the median). For the typical firm, decision rights for IT principles were tightly held by IT monarchies; infrastructure decision rights were split between business monarchies and IT monarchies, architecture decision rights were tightly held by IT monarchies; and investment decision rights were tightly held by business monarchies. Most firms followed a *federal* structure for input to all four decision domains. This dominant pattern follows generally accepted corporate governance guidelines of encouraging broad-based inputs but tightly controlling the decision rights to a few leaders. Firms used a wide variety of mechanisms to implement a particular governance archetype often

involving steering committees, a budgeting process, investment approvals and chargeback practices. For example, a *business monarchy* was often implemented with an executive committee containing the CEO, CFO and heads of the business units. The CIO was typically part of the committee and involved in decision-making but did not act independently from the senior leadership. We explore the effectiveness of these mechanisms in the next section.

**Figure 1**

**IT Governance Patterns for Input and Decision Making**  
 % of firms using each governance archetype for a domain

Domain Archetype	IT Principles		IT Infrastructure Strategies		IT Architecture		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy	0%	21%	0%	33%	0%	12%	8%	58%
IT Monarchy	12%	50%	0%	33%	12%	58%	4%	17%
Feudal	8%	4%	8%	8%	4%	8%	8%	0%
Federal	54%	8%	67%	8%	50%	4%	67%	12%
Anarchy	12%	4%	8%	0%	17%	0%	0%	0%
No Data or Don't Know	12%	12%	17%	17%	17%	17%	12%	12%

Dark shaded cells = Typical firm

Source: Data from the study of 40 firms titled: "Justifying and Funding IT Infrastructure," the Results Research Project ITI, The Concourse Group. Conducted by Eileen Birge, Nancy Wendt, Peter Weill, M. Lynne Markus & others. Analysis by Richard Woodham and Peter Weill at MIT CISR based on 24 firms.

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The governance pattern of the typical firm reflects the stage of evolution of IT management in many firms. Many firms are in the process of evolving to more effective governance structures but currently have governance that doesn't always encourage desirable behavior. Perhaps the governance structure was never designed; or perhaps the firm's strategy, and therefore desirable behaviors, has radically changed. The governance structures of top performers reflect more mature IT management and better harmony between IT decision-making, desirable behaviors and performance goals. Later we will describe how top performing firms govern and present a framework for designing effective IT governance.

For the typical firm, the IT governance pattern has several stress points and challenges.<sup>11</sup>

<sup>11</sup> These conclusions were drawn from a statistical analysis of the data in combination with identifying patterns in the interview transcripts, as well as from discussions with senior executives having governance responsibilities.

1. **Exception handling:** Forty-five percent of firms had no substantial IT investments outside the governance structure, reflecting effectively implemented governance with clear exception handling processes. Twenty-five percent of firms had approval rights for investments below a specified amount (e.g., CIO approves below \$100,000). In these firms IT governance concentrates on the ‘big ticket’ items, however, the risk is that projects are organized to avoid governance processes, and accountability for results is hidden.
2. **Governance design:** Many firms do not actively design their IT governance structures. Instead, the governance structure emerges as a result of designing the individual decision-making processes for each IT domain, such as the IT investment approval process. As a result the overall IT governance has inconsistencies and the various elements encourage different and sometimes conflicting desirable behaviors. For example, in several firms we studied, maintenance and upgrades were not subject to governance structure. This omission will undermine IT governance if the prediction for maintenance and upgrades to reach 69% of IT budgets is correct.<sup>12</sup> In other firms governance is incomplete, as a senior manager from a process manufacturing firm explains, “We use a repeatable business case model but there is no accountability for payoff.” Effective governance requires taking a holistic perspective of how key IT decisions are made including their interactions and omissions. Also of concern was that between 12 and 17% of respondents did not know (or describe) their IT governance for a particular domain.
3. **Who Sets IT Principles?** The procedures for decision-making at the typical firms raise concerns particularly where IT is strategic. Relying on an *IT Monarchy* for IT principles entrusts the IT professionals with the huge responsibility of deploying half the typical firm’s annual capital investment. Even particularly business-savvy IT professionals should not shoulder this responsibility alone. More importantly, the people responsible for decision-making should also be accountable for results. IT principles describe how IT will be used to create business value. Accountability for those decisions and the resulting business value should reside with the level in the organization commensurate with the importance of the IT asset. In the high performing firms described below, decision rights for IT principles were made either by a *federal* structure or a *business monarchy* so that the business took responsibility for IT’s contribution in the creation of value.
4. **Governance Transparency:** Using different archetypes for each IT domain requires the coordination of several mechanisms across domains, often resulting in a complex governance structure. In many firms the IT governance process was convoluted and not readily transparent to managers. The inability of key business and IT executives to describe the IT governance structure consistently is a warning sign of the need to rethink governance. For example, each of the senior managers at a Fortune 500 manufacturer sees the IT governance structure differently. The CIO explains, “At this time there are still a few instances of small investments made at remote locations or subsidiaries (e.g., servers) and an occasional instance of larger investments by a business division (e.g., applications or development tools) outside the governance structure.”

## **Governance Mechanisms**

Governance mechanisms are the vehicles used to implement a particular governance archetype including: organizational structures, procedures, committees and policies. A governance mechanism may be specific to one particular domain or may cover multiple IT domains. Figure 2 describes the most commonly used

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<sup>12</sup> “Gartner DataQuest October 2001–End-User IT Spending.” Analysis of capital and operating expense on software, hardware, networks, external services and internal staff.

governance mechanisms in our study and their typical objectives. Also included are examples of the desirable behavior when the mechanism is effectively implemented and undesirable behavior when poorly implemented.

**Figure 2**  
**Governance Mechanisms**

Mechanisms	Objectives	Desirable Behavior	Undesirable Behavior Observed	Positively Correlated With Performance Metric*
Executive Committee	Holistic view of seamless business including IT	Seamless IT management	IT ignored	Growth, Market Cap Productivity
IT Councils	Senior management involvement and education in gaining business value from IT	Involvement and alignment	Abdication by senior management	Margin, ROA Productivity
Architecture Committee	Identify strategic technologies and standards – enforcement?	Business driven IT decision making	IT police and delays	Margin Growth, Market Cap, Productivity
Capital investment approval and budgets	Separation of proposal and approval	Prudent IT investing	Paralysis by analysis	ROA, Productivity
Service level agreements	Specify and measure IT service	Professional supply and demand	Manage to SLA not business need	ROA
Chargeback	Recoup IT costs from business	Responsible use of IT	Arguments about charges and warped demand	ROA
Process teams with IT membership	Take process view using IT (and other assets) effectively	End-to-end process management	Stagnation of functional skills and fragmented IT Infrastructure	ROA, Productivity

\*Statistically significant positive relationship between the use of the mechanism and the metric.

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Statistically, top-performing firms as measured by financial performance, tended to focus on a particular set of mechanisms suited to achieving the specific performance metric at which they excelled.<sup>13</sup> For example, top performers as measured by ROA were heavy users of IT councils, capital investments processes, service level agreements, chargeback practices, and process teams. All these mechanisms were used to maximize the value derived from the firm’s assets by reuse, standardization, clear agreements and financial disciplines. According to the VP of IT Planning at a major services firm, “We have an explicitly stated target architecture in mind when working on the infrastructure. We have a vision of what the company will look like in three years and we make the infrastructure investments to get 1/3 of the way there each year.”

<sup>13</sup> All the patterns of high-performing firms described in this section were statistically significant and thus unlikely to be due to chance. The patterns of high-performing firms were found by identifying the mechanisms described by each firm and correlating the use of the mechanisms with a set of performance metrics over the previous three years. The performance metrics were: revenue growth, change in market capitalization, return on assets as adjusted for industry differences, change in net profit margins and change in productivity (revenue per employee). We are not suggesting use of a governance mechanism caused high performance. Instead we found atypical patterns of governance mechanisms were used by high-performing firms.

This firm uses a combination of mechanisms to create desirable behavior: IT councils, architecture committee, and the investment process. The IT council articulated a three-year business vision for the firm and for the role of technology. Overlapping members of the IT council and the architecture committee identified strategic technologies and specified the associated IT architectures. Three yearly, but connected, IT infrastructure investments were made *via* the capital investment process and linked back to the three-year business vision. The investment process includes a step where the architecture committee reviews investment proposals that enforce the use of selected strategic technologies. The desirable behavior of “business-driven IT decision-making” is implemented at this firm with a combination of these three IT governance mechanisms.

### **Top Performing Firms Were Different**

Top-performing firms did not follow the typical governance patterns. Instead, leading performers on a particular financial metric had specific governance patterns that encouraged their unique combination of desirable behaviors. The differences from the typical firm were often not huge but were important in at least one IT decision domain. We correlated the average of the last three years’ performance using a number of financial metrics with IT governance. All relationships described in this section were statistically significant and thus unlikely to be due to chance.<sup>14</sup>

Firms with higher growth in market capitalization typically had very decentralized IT governance structures with *federal* archetypes for investment, *feudal* archetypes for architectures, and *anarchy* archetypes (*i.e.*, determined by the business process owner) for IT principles. This governance pattern results in maximum autonomy to business unit managers encouraging entrepreneurship with little regard to standardization. When governing IT, there is a tradeoff for most firms—balancing the responsiveness of the business process owners to their local customers and sharing and standardizing the use of IT assets within the firm. In high market capitalization firms, this balance is strongly skewed to meeting local customer needs enabling the high revenue growth rates associated with market capitalization growth. Firms with high growth in market capitalization were more likely to use the mechanisms of executive committees and architecture committees for governance.

Leading performers, measured by ROA improvements, differ from the typical firm in that infrastructure and architecture decisions are made by a centralized *business monarchy* (rather than an *IT Monarchy*) to encourage sharing, reuse and asset utilization. Getting the most out of a firm’s IT assets first requires a governance process designed to lead to agreement on the key IT assets for the firm’s future. Then governance processes must be harmonized to encourage the development, utilization and investment in these assets while discouraging duplication or investment in non-key assets. The investment in non-key assets not only reduces the return from the key assets but also diverts management’s attention. These firms typically relied more heavily on IT councils, capital investment, service level agreements, chargeback and process teams. The CIO of one of these firms explains, “The CFO believes absolutely that IT is strategic. He recognizes that you need a reliable, scalable infrastructure to support the applications that improve our business. Our CFO sees operational inefficiencies and sees technology as a way to drive costs out.”

Leading performers measured by either profit margin or productivity (*i.e.*, revenue per employee) also have *business monarchies* for making decisions on IT principles (rather than *IT monarchies*).

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<sup>14</sup> The relationships were determined by correlating the last three years’ performance on a number of metrics with governance archetype. The performance metrics were: revenue growth, market capitalization change, return on assets adjusted for industry differences, change in net profit margins, change in productivity (revenue per employee). We are not suggesting a governance archetype caused high performance. Instead we found high performing firms used atypical patterns of governance archetypes.

## **The Primary Role for IT Helps Determine IT Governance**

Firms in the study varied in how they viewed the primary role of IT. In some firms the role of IT is to reduce cost and duplication. In other firms the primary role of IT is to enable future business strategies. These two types of firms varied significantly on the percent of their resources invested in IT, the amount of senior management attention given to IT and the types of performance benefits expected from IT. Firms where IT was viewed as enabling future business strategies invest up to three times more in IT as a percentage of revenues than firms where the major role of IT major role was to cut costs.<sup>15</sup>

We suggest that firms with such different views for the roles of IT require different governance approaches. Our statistical analysis found that firms where IT's role was viewed as strategic did not follow the typical governance pattern in three areas.<sup>16</sup> Decisions on IT principles were made by *business monarchies*, and IT infrastructure and architecture decisions were made by *federal* structures. This pattern reflects the strategic role of IT and is well designed to meet the need to share decision-making between the business and IT. *Federal* decision-making structures tend to take longer to reach decisions than *monarchies* but, if well implemented, enable the type of dialog between the business and IT that results in effective strategic uses of IT. In addition, *federal* structures, often by their very nature, encourage buy-in by the senior managers for the strategic use of the technology.

Firms where the role of IT is predominantly viewed as one of cost saving differ from typical firms in two areas. A *business monarchy* makes decisions on IT principles, and an *IT Monarchy* makes IT investment decisions. This pattern is very well designed for cost focused firms as IT is non-strategic and is usually managed centrally with a budget allocated from the corporate center. Firms that neither saw the primary role of IT as strategic nor cost saving tended to have more complex governance patterns that reflected their more schizophrenic use of IT.

## **IT GOVERNANCE AT STATE STREET**

At State Street Corporation, IT governance is a vehicle to implement strategic change. In some IT domains State Street is similar to the typical firm in the study; decision rights are held by a *business monarchy* for investment and an *IT Monarchy* controls decisions concerning architecture and infrastructure. However, State Street differs in one very important IT decision domain. Decision rights for IT principles are held by a *business monarchy* reflecting the importance of IT and the desire of the firm's leadership to use IT governance to drive change.

David Spina, Chairman and CEO of State Street recently articulated a vision of 'One State Street,' a leading specialist in meeting the needs of sophisticated global investors, focused on clients across the State Street product family. "When clients look at State Street, our organizational lines must be completely invisible, and behind this seamless face, we must have industrial-strength lines of communication connecting every part of the company."<sup>17</sup> Since becoming CIO of State Street in 1998, John Fiore has refocused the governance structure to encourage the desirable behavior required for 'One State Street.'

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<sup>15</sup> Drawing on Chapter 4 in P. Weill & M. Broadbent, "Leveraging the New Infrastructure: How market leaders capitalize on IT," Harvard Business School Press, June 1998. (Based on a study of 54 businesses in seven countries over five years.)

<sup>16</sup> All the patterns of governance described in this paragraph were statistically significant and thus unlikely to be due to chance. The governance patterns of firms with different views of the role of IT were found by correlating the self-described role of IT with the use of different governance archetypes.

<sup>17</sup> P. Weill and R. Woodham, "State Street Corporation: Evolving IT Governance," MIT Sloan Center for Information Systems Research (CISR) Working Paper No. 327, revised August 2002.

State Street is a world leader in financial services providing investment management, investment services, trading and research to investment managers, corporations, pension funds, mutual funds and individuals. At the end of 2000, State Street had \$6.1 trillion in assets under custody and \$711 billion in assets under management with 17,600 employees in 23 countries serving clients in over 90 markets. In 2000, State Street had total revenues of over \$3.6b and net income of \$595m with a compound annual growth rate in both measures of over 19% annually since 1996.<sup>18</sup>

State Street is one of the world's leading developers and users of information technology, committing in the range of 20 to 25% of its total operating expense budget to technology and technologists. Information delivery and transaction systems such as State Street Global Link and In~Sight<sup>SM</sup>, and electronic trading platforms such as FX Connect®, Lattice<sup>SM</sup> and Bond Connect® provide clients with the systems they need to succeed in the financial markets. *Computerworld* magazine recently voted State Street one of the top twenty places to work in information technology for the fourth time in the past five years. *InformationWeek* magazine also recently ranked State Street among the 500 most innovative users of technology. Reflecting this reliance on IT, Marshall Carter, former CEO of State Street, often referred to State Street as a "A technology Company with a Banking License."

Historically State Street's IT organization was highly decentralized. A small central IT organization provided network services, data center operations and transaction processing for mutual funds, pension funds and global operations. Each of the four major business units had a self-contained IT operation responsible for operations. A small number of infrastructure services were provided centrally including the communications network.

To deliver 'One State Street' requires a single point of contact and consistent client view of State Street in order to develop new business and reduce time to market. Creating value for stockholders and clients continues to be a key objective at State Street and deployment of a shared IT infrastructure is one approach to deliver greater value from IT investment and enable 'One State Street.' The company began identifying the desirable behaviors to encourage 'One State Street' including: the development of a consistent view of the customer across State Street; reduction in penalties to early adopters in order to encourage the adoption of new technologies; the creation of one IT community across State Street; and the introduction of justification techniques for IT investment, such as the *pro forma* business cases and measurement of IT impact.

The overhaul of the IT governance structure was designed to encourage the desirable behaviors for 'One State Street.' During the overhaul Fiore and Amy Gutschenritter, senior vice president of IT Governance, identified obsolete mechanisms, assigned new responsibilities to emphasize/establish/reinforce mechanisms that were already effective and introduced new mechanisms. The role of the Office of Architecture, originally responsible for setting overall architecture framework, conducting research in applied technology and identifying and setting technology standards, was extended. The Office's new responsibilities include reviewing projects for best use of, and compliance with, standards. When a standard is not available, the Office of Architecture helps project managers identify and implement the most appropriate technology to satisfy the business need. The new mandate for the Office of Architecture made it a powerful force both to promote sharing and re-use of technology across the company and to support the deployment of new technology in order to develop new business. Figure 3 summarizes the IT inputs and decision-making affecting IT at State Street, and identifies the key mechanisms for each domain.

The Information Technology Executive Committee (ITEC) is a newly established mechanism comprised of State Street's executive business leadership. ITEC is responsible for reviewing, analyzing, and

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<sup>18</sup> Source: State Street 2000 Annual Report.

synthesizing IT investment needs of individual business units in order to create an enterprise-wide IT budget. The leaders of each business unit and the CIO identify the key IT business and infrastructure projects for the coming year. These projects are classified according to their contribution to the corporate growth targets and importance to the business unit. The result of this analysis is a list of all IT initiatives for the coming year. ITEC members will negotiate among themselves to create a reduced list of projects and IT infrastructure initiatives designed to meet the corporate growth targets and the agreed percentage of the operating expense budget available for information technology. Once the ITEC has decided on the list of projects, the IT organization tracks the allocation and use of the IT budget by project and business unit using an activity tracking system.

**Figure 3**  
**State Street Governance Patterns**

Domain Archetype	IT Principles		IT Infrastructure Strategies		IT Architecture		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy		• ITEC						• ITEC • CIO
IT Monarchy				• CIO • IT Leadership	• IT Leadership • Arch Office	• CIO • IT Leadership		
Feudal								
Federal	• ITEC • CIO • IT Leadership • IT Org		• IT Leadership • ITEC • Arch Office				• CIO • Budgets • SLA • Activity Tracking • IT Leadership	
Anarchy								

 Typical Firm

ITEC	Information Technology Executive Committee
Arch Office	Office of Architecture
CIO	CIO Staff
IT Leadership	IT Leadership Group

SLA	Service Delivery Agreements and Chargeback
IT ORG	Federated IT Organization
Activity Tracking	Activity Tracking System
Budgets	Enterprise-Wide IT Budget Management

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ITEC has several advantages over earlier IT investment committees and processes. The negotiation of an enterprise-wide IT budget encourages focus on the enterprise-wide value in the use of IT rather than on the needs of individual business units. The individual business executives naturally tend to focus on the profitability of their own business. By combining discussion of infrastructure investment with these business unit initiatives the value of making investments in enterprise-wide infrastructure for shared use is much clearer.

To support ‘One State Street,’ Fiore recognized that the structure and culture of the IT organization needed to change. The change from separate business unit IT services to a ‘One State Street IT

community' responsible for supporting the whole enterprise has taken time and is still evolving. A number of different mechanisms were combined to encourage and support this cultural transition. The CIO staff responsible for broad IT strategy was re-organized to include senior IT managers from both the central and business unit IT organizations. An IT Leadership Group (ITLG) was created composed of all senior IT managers responsible for implementing the IT strategy. An IT portal was developed creating an electronic community and shared knowledge base to support the IT organization across State Street. Links with the business leadership are ensured for the key decisions. For example, high-level architectural standards are presented by the ITLG to the ITEC to get input and buy-in.

Current evidence suggests that this IT governance structure encourages desirable behaviors, however, the transition is still occurring. Testimonials from project managers indicate that the architectural review process helps deliver solutions more quickly because technology issues surface before they critically impact the projects. A messaging hub with capabilities to interface with a wide variety of platforms services applications for four different business units, thereby reducing the cost and time to market by sharing and reusing the infrastructure.

To assess the impact of the IT governance structure, State Street is currently assessing a set of quantitative metrics. Key to any IT governance structure are the metrics and accountabilities for achieving IT value. State Street has made significant progress in identifying business metrics influenced by IT and tracking these over time. The metric system, using a common baseline of 1997, demonstrates the impact of IT on such key business performance indicators as the number of State Street portfolios, of client positions calculated, and of daily net asset values (NAV) calculated for NASDAQ. For State Street, these metrics provide clear measures of the impacts of IT investments on business performance. For example, the number of NAVs calculated has increased nearly threefold from 1997 to 2000. At the same time the IT cost per NAV was reduced by 50%. Similarly the number of calculated client portfolios increased over 50% in the three-year period while the IT costs per portfolio have dropped. Both these metrics reflect a significant increase in value from IT on key measures.

Analysis of metrics such as these leads to change—affecting both IT decision making and governance. First, demonstrated results using business performance metrics create proof points for future investment decisions. Secondly, these business performance metrics drive changes in the IT governance structure as the organization learns from the data generated. Together these changes, over time, should maximize the value of IT to the business.

## IT GOVERNANCE FRAMEWORK

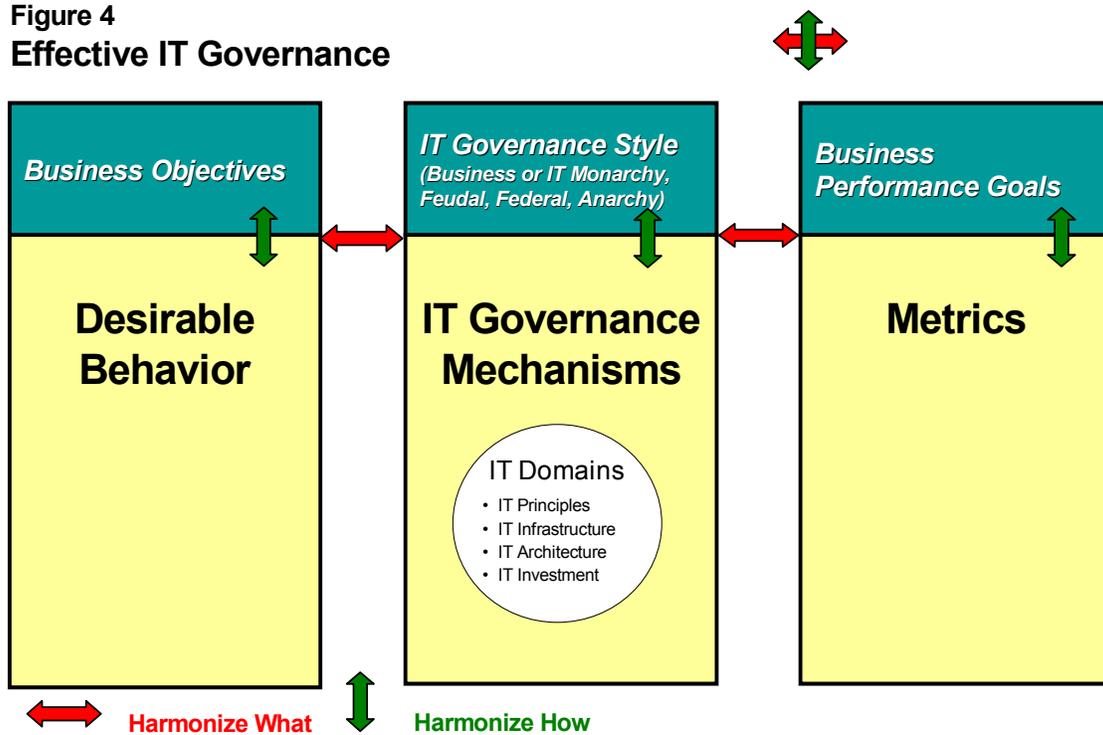
Based on the research, we developed the framework for IT governance in Figure 4, presented in skeletal form so it can be completed for any firm. Effective governance requires the harmonization (*i.e.*, the horizontal arrows) of **business objectives**, **IT governance style** and **business performance goals**. For example, the critical business objectives for the firm (e.g., grow existing business, sharing and reuse, and reduce time to market) need to be harmonized with the archetypes of IT governance (e.g., *federal* archetype for IT investments) and business performance goals (e.g., targets and time frames). In addition, the governance framework must harmonize the achievement and measurement of these (vertical arrows): **business objectives** and **desirable behavior**; **IT governance archetype** and **mechanisms**; and **business performance metrics** and **goals**. For example, the business objectives (e.g., sharing and reuse) are enacted in a set of desirable behaviors (e.g., look within firm first).

In another case we studied, based on our model, it would appear that an initiative to create a shared services model is at serious risk. The VP of IT Infrastructure of this company commented on the firm's approach to IT governance and a shared service proposal (one of the key desirable behaviors identified by that firm), "The council is chartered to set direction through the IT strategy and to decide on IT standards. The Council

is comprised of the CIOs of the business units and the IT directors for the regions (Americas, Europe, Asia Pacific). The Council meets every two weeks. We took the shared services proposal to the IT Council.”

In this firm, “shared services” was a desirable behavior (bottom of left box in Figure 4) designed to meet the firm’s business objectives (top of left box). The mechanism (bottom of middle box) used to implement shared services was the IT Council comprised only of IT managers (an illustration of an *IT Monarchy* governance style (top of middle box)). The domains of the IT council were IT strategy and IT standards. This shared services initiative was struggling and will probably fail, as there was a lack of harmony between the firm-wide objective of shared services and the IT-centric IT committee attempting to make the decision. The other managers of the firm will likely resist the shared services proposal, as they were not involved in shaping the services and implementing the initiative. Effective IT governance requires all of the major governance mechanisms to be harmonized with each other and with the firm’s business objectives and performance goals.

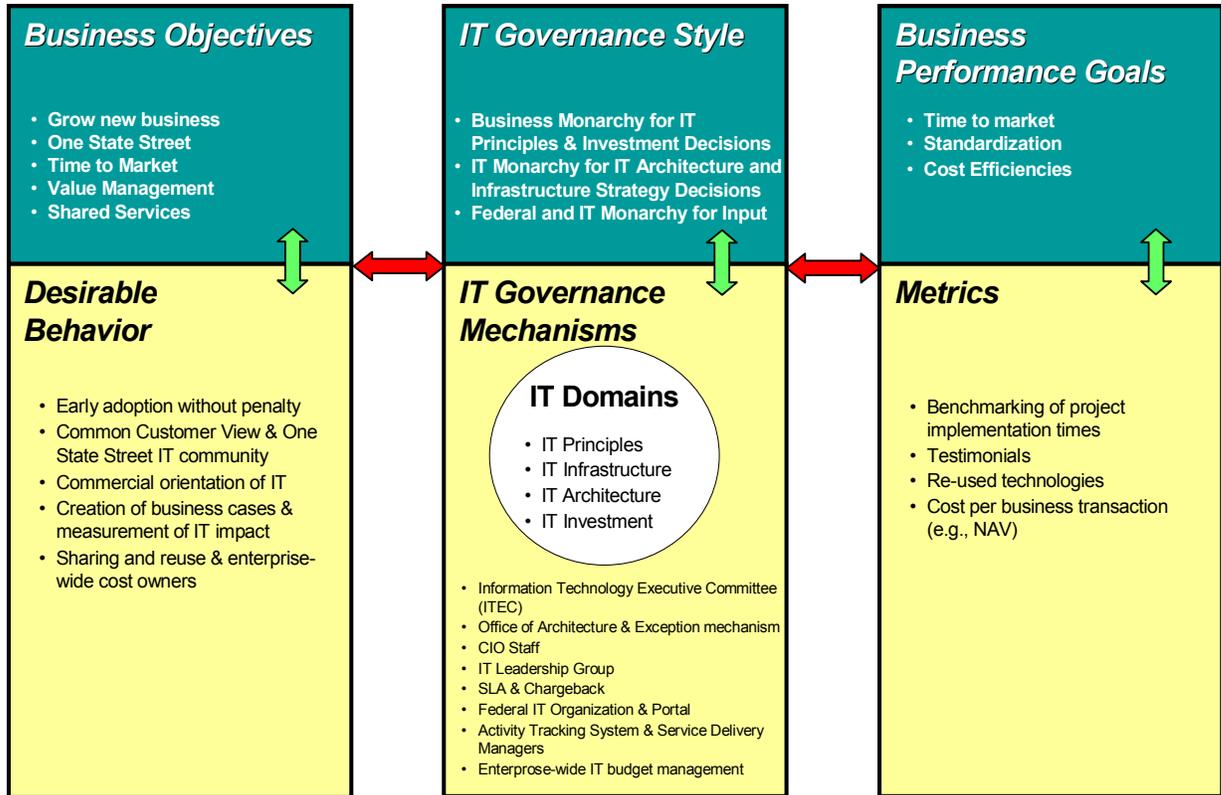
**Figure 4**  
**Effective IT Governance**



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Applying the framework to a particular firm provides a simplified summary using one diagram to communicate and analyze both the present IT governance structure and a desired one. State Street’s IT governance is summarized in Figure 5. As shown in the diagram, State Street’s governance structure creates harmony among business objectives, governance archetype, and business performance goals. A view of the diagram vertically illustrates State Street’s process of refining harmony over time. For example, the impetus to achieve the desired governance is driven by fine-tuning the mechanisms as a result of tracking the performance metrics over time.

**Figure 5**  
**IT Governance at State Street**



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## RETHINKING IT GOVERNANCE

Creating effective IT governance is critical if firms are to exploit information technology to achieve their business performance goals. Our framework provides a way to analyze IT governance combining IT domains, governance archetypes, mechanisms and metrics to encourage desirable behavior that supports the firm performance objectives. Implementing effective IT governance requires a deliberate process, carefully specifying and harmonizing each of the elements in the framework. Each firm's governance structure will be unique to its objectives and performance goals. We propose the following process to rethink IT governance:

1. Map the "as is" IT governance onto a diagram like Figure 3. What governance mechanisms are used? Are the mechanisms working together to encourage desirable behaviors in the firm?
2. Identify the business objectives for the firm and the associated desirable behaviors by completing the left hand box of a diagram like the one in Figure 5.

3. Consider the way the typical firm governs IT (Figure 1) and how the top performers on each financial metric are different. Consider the mechanisms typically used (Figure 2) and their characteristics.
4. Redesign the firm's IT governance by completing the middle box of Figure 5 for the firm. Create a "to be" version of Figure 3 for the firm identifying which mechanisms will be used for each IT domain.
5. Identify the performance goals, metrics and accountabilities required for the new governance models by completing the right-hand box on Figure 5.
6. Plan the move from the "as is" to the "to be" governance mechanism recognizing the major organizational and cultural changes involved.

From our research we identified the following characteristics as critical for effective IT governance and achievement of the very difficult transition in Step 6 above.

- **Transparency:** Make the governance mechanism transparent to all managers. The more covert, off-governance IT decisions made, the less confidence there will be in the structure and the less willingness to play by the rules designed to lead to increased firm-wide performance.
- **Actively Design Governance:** Overtly design IT governance with the desirable behaviors in mind. Ineffective governance structures are often the result of IT governance by default. When IT governance occurs by default, several mechanisms (e.g., IT council and IT investment approval process) are typically designed independently to deal with a particular but different issue. Even though the individual mechanisms are carefully designed, the combined effect is not considered. Furthermore, different people whose objectives now in all likelihood have changed probably designed the mechanisms at different times.
- **When to Redesign Governance:** Rethinking the whole governance structure is a major undertaking and should be done infrequently. Designing and implementing a new governance structure takes months and requires even more time for the organization to accept and learn its use. Changing a governance structure more frequently than every twelve months is not recommended. Conversely a major change in strategy or a merger typically requires a governance change. Changes in the economy should not require a change in governance structure, just a change in the types of decisions that are made within the existing governance structure. If a downturn in the economy requires a change in a firm's governance structure, that often means the governance structure was poorly designed and needs attention.
- **Educate about Governance:** Education to help managers understand and use the governance mechanisms is critical. Educated users of the governance mechanisms are more likely to be accountable for the decisions made and are less likely to result in the situation described at a major process manufacturing firm. "We have to re-justify our refresh strategy every year. Should have been 10 minute pitch, but we were in the room for 45 minutes...the management committee turned into a team of volunteer architects to redesign cheaper desktops."
- **Good governance requires choices:** Effective governance structures are simple and attempt to optimize a small number of performance goals and metrics. The more performance goals the governance structure attempts to optimize, the harder it is to manage. Optimizing more performance goals requires more governance mechanisms, each often encouraging different or conflicting desirable behaviors that often simply lead to confusion. Most large firms attempt to optimize several performance goals supported by their IT use. IT governance, like business strategy, requires choices to determine which performance goals, and thus desirable behaviors, are

most important. The most important of these should be designed into the governance structure while the rest can be left to the exception process.

- **Handling exceptions:** Successful businesses are continuously forging new opportunities that will be unsupported by the existing IT governance structure. To support these opportunities the governance structure must clearly articulate a process for handling exceptions. An exception handling process brings the issues out into the open, allowing debate. For example, UPS, the successful package and logistics firm, has a clear exception mechanism for architecture and standards. Any exception to the architecture has to be justified: the business champion drafts a one-page statement justifying the exception and the architect drafts a one-page statement against the exception. If the business champion and the architect cannot come to an agreement, the issue is escalated through the IT architecture committee to the CIO and eventually to the executive committee if agreement cannot be reached. This process allows each exception to be openly debated on its merits. Provided that the business case is sound, the exception is granted. It is then placed on a list of technology initiatives outside the architecture that are continuously reviewed to judge if any should be redeveloped according to UPS architecture standards. The strength of UPS' approach is that it allows the IT organization to effectively support new business that has unique systems requirements and does not fit neatly with UPS' highly standardized IT environment. Subsequently, if the market opportunity is large enough, the unique system requirements are brought back into the core and made compliant with UPS standards and architecture.<sup>19</sup>

The alternative to governance is an uncoordinated set of mechanisms implemented at different times, each addressing a specific and often local issue. This structure is unlikely to be effective in focusing a firm's IT practices on strategic business objectives.

As the importance of IT continues to grow and firms attempt to balance the benefits of entrepreneurship and time-to-market with the advantages of centralized control and standardization, the need for effective IT governance will also grow. Leading in this new world will prove more difficult every year as complexity increases and time to market reduces. Instead of just leading, senior managers need to design governance processes that encourage desirable behavior. In short, **don't just lead, govern**. Governance encourages and leverages the ingenuity of all the firm's people, not just the leaders, while still ensuring compliance with the firm's overall vision and principles.

Designing effective IT governance is the responsibility of senior management and IT governance must mesh with the other governance structures in the firm. Continuing friction between the federal and state governments teaches us that effective governance is hard and evolutionary as new issues continuously challenge the *status quo*. However, where it exists, effective governance is a source of sustainable competitive advantage.

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<sup>19</sup> Jeanne Ross provided this description of UPS' exception handling process. For a description of how UPS uses IT see CISR Working Paper No. 318, "United Parcel Service: Delivering Packages and E-Commerce Solutions."