



IT Governance Archetypes for Allocating Decision Rights

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How Top Performers Manage IT Decision Rights for Superior Results

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3

IT Governance Archetypes for Allocating Decision Rights

IN A RECENT SESSION of MIT Sloan School of Management's "IT for the Non-IT Executive" two-day program, one of the authors asked the attendees what words they would use to describe their enterprise's IT governance. Following are some of the answers:

What IT governance?

Anarchy!

Depends on the amount of money involved.

Let me ask my CIO.

The business units make all the strategic decisions.

Joint decision making between the business unit heads and the central IT group.

Senior management lays down the law.

My IT folks manage those things.

Some of the attendees knew how they governed IT. Others did not. The entire group was searching for a tool they could apply to design governance for their enterprise and also use to learn from other enterprises. Representing and analyzing decision rights is critical to IT governance. The purpose of this chapter is to provide a

set of archetypes and thus choices for IT decision rights. The chapter uses these archetypes to describe how firms make IT decisions and provides three cases of IT governance in growth-seeking firms.

This chapter explores the question: Who should make governance decisions? We focus on “typical” patterns to examine the variety of choices and rationales driving IT governance arrangements. In chapter 4 we will describe the mechanisms enterprises used to implement governance. In chapter 5 we will explore how top-performing firms govern differently.

To understand how enterprises govern, we describe the governance arrangements of the 256 enterprises we surveyed. These enterprises were large, with an average of eight business units.¹ The average enterprise invested 8 percent of its total expenses in IT and employed 850 IT professionals. Ninety percent of the CIOs who completed our survey had enterprisewide responsibility for IT. Nearly half of the enterprises had highly autonomous business units but designed governance arrangements to create or capitalize on synergies across the business units. Most of the rest of the enterprises had less autonomous business units with significant synergy among their business units.

Archetypes

We use political archetypes (monarchy, feudal, federal, duopoly, anarchy) to describe the combinations of people who have either decision rights or input to IT decisions. One of these six archetypes (figure 3-1) could describe how your enterprise makes one or more of the five key IT decisions or provides input to the decision makers.

Business Monarchy

In a business monarchy, senior business executives make IT decisions affecting the entire enterprise. The IT investment process State Street Corporation introduced in 2001, described in the previous chapter, is a business monarchy in action. At State Street the COO, the CAO, the CIO, and the senior executives leading the various business units make up an executive committee. The CIO participates as an equal partner with the other leaders. The senior busi-

FIGURE 3-1

IT Governance Archetypes

STYLE	WHO HAS DECISION OR INPUT RIGHTS?
Business Monarchy	A group of business executives or individual executives (CxOs). Includes committees of senior business executives (may include CIO). Excludes IT executives acting independently.
IT Monarchy	Individuals or groups of IT executives
Feudal	Business unit leaders, key process owners or their delegates
Federal	C-level executives and business groups (e.g., business units or processes); may also include IT executives as additional participants. Equivalent of the central and state governments working together.
IT Duopoly	IT executives and one other group (e.g., CxO or business unit or process leaders)
Anarchy	Each individual user

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ness executives (the CxOs or C-level executives) decide as a group. Figure 3-2 lists the distinguishing characteristics of the different governance arrangements and how we classified the enterprises.

Typically, business monarchies rely on input for key decisions from many sources. For example, the IT investment decisions at enterprises such as State Street receive input from (a) the CIO's direct reports, (b) the IT leaders from the business units, (c) the enterprisewide IT budget management process, (d) service-level agreements and chargeback, and (e) an activity-tracking system showing all IT resources and how they are deployed.

IT Monarchy

In an IT monarchy, IT professionals make IT decisions. At UPS, for example, the IT Governance Committee, which consists of senior IT managers, makes the strategic decisions that affect IT architecture. Many other enterprises, including State Street, have an Office of IT Architecture that makes architecture decisions. Enterprises implement IT monarchies in many different ways, often involving IT

FIGURE 3-2

Key Players in IT Governance Archetypes

	C-level executives	Corporate IT and/or business unit IT	Business unit leaders or key business process owners
Business monarchy	✓		
IT monarchy		✓	
Feudal			✓
Federal	✓	✓	✓
	✓		✓
IT duopoly	✓	✓	
		✓	✓
Anarchy			

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professionals from both corporate teams and business units. DuPont, for example, has an enterprise IT architecture group with representatives from all regions, all strategic business units, and all competency centers. This group proposes architecture “rules” to the senior IT management team, consisting of the corporate CIO and the CIOs of the largest business units. The senior IT management team ensures the clarity of the rules and owns the enforcement of architectural standards.

Feudal

The feudal model is based on the traditions of “merrie olde England” where the princes and princesses or their designated knights make their own decisions, optimizing their local needs. For IT governance the feudal entity is typically the business unit, region, or function.² Overall in our study, the feudal model was not very common because most enterprises were looking for synergies across business units. The feudal model does not facilitate enterprisewide decision making.

Federal

The federal decision-making model has a long tradition in government. Federal arrangements attempt to balance the responsibilities and accountability of multiple governing bodies, such as country and states. Charles Handy, among others, has recently identified the federal model's utility in negotiating the interests of both the central organization (typically headquarters) and individual units.³ We defined the federal model as coordinated decision making involving both the center and the business units. Unit representatives in a federal model could be either or both the unit leaders or business process owners. Business unit and/or corporate IT leaders might also be involved in federal governance as additional participants.

The federal model is undoubtedly the most difficult archetype for decision making because enterprise leaders have different concerns from business unit leaders. Members of a federal organization represent their own unique responsibilities. In addition, incentive systems often focus managers on business unit rather than enterprise results. The impact of shared resources on business unit performance—and specifically the transfer prices charged for the resources—typically raises concerns about fairness. Enterprises in the study often used federal models for input to decisions, perhaps because of fairness and representation issues.

In federal models, the biggest, most powerful business units often get the most attention and have the most influence on decisions. Consequently, smaller business units remain unsatisfied and sometimes secede from the union to meet their own needs. Enterprises enlisting federal governance structures usually rely on management teams and executive committees to resolve inherent conflicts.

IT Duopoly

The IT duopoly is a two-party arrangement where decisions represent a bilateral agreement between IT executives and one other group.⁴ The IT executives may be a central IT group or a team of central and business unit IT organizations. The other group may be CxOs, business unit leaders or business process owners, or groups

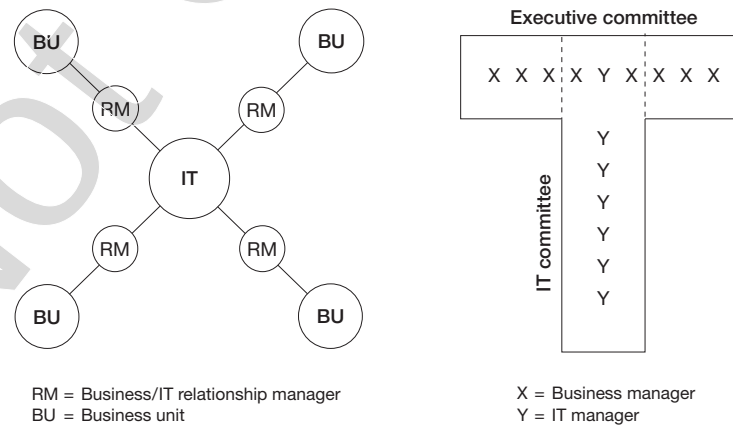
of key system users (see figure 3-2). A duopoly differs from a federal model in that a federal arrangement always has both corporate and local business representation, while a duopoly has one or the other but not both and always includes IT professionals.

IT duopolies often take one of two forms: a “bicycle wheel” or a T-shaped committee structure (figure 3-3). The bicycle wheel describes a duopoly involving the central IT group and the business units. The IT group is at the hub and the business units are around the rim. The spokes are the series of bilateral relationships between the IT group and the various business units. Each business unit gets individual attention along the spokes, but the same hub supports the whole enterprise.

A duopoly involving the central IT group and the senior management team (the CxOs and the heads of the business units) is often implemented by two overlapping committees. The executive committee (the horizontal part of the T) predominantly comprises business managers. The vertical part of the T is an IT committee predominantly comprising technical managers. A small set of peo-

FIGURE 3-3

Bicycle Wheel and T-Shaped IT Duopolies



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ple participates on both committees to coordinate and ensure overlap. To improve coordination, the committees may meet on the same day, say, the executive committee in the morning and the IT committee in the afternoon, with some joint meeting time.

Over a third of the 256 enterprises used duopolies to make decisions in the three less-technical IT decision domains: IT principles, business application needs, and IT investment. Duopolies also were frequently used to provide input into architecture and infrastructure decisions. The duopoly archetype is popular partly because it involves only two decision-making parties—it can achieve many of the objectives of a federal model using a simpler management structure. Similarly, duopolies have an advantage over feudal models in that the central IT group is often one of the few groups that sees the enterprise as a whole and can look for opportunities for sharing and reuse. The IT professionals can also manage adherence, either overtly or covertly, to the enterprise's IT architecture. Duopolies often rely on relationship managers or business unit CIOs to represent business unit needs. The IT group can have a series of duopolies with different business units enabling more tailored decisions in less time. These duopolies have the advantage of focusing directly on the needs of the business units, resulting in higher business unit satisfaction. But duopolies with business units can be expensive and ineffective when organizationwide issues are being decided.

Anarchy

Describing the anarchy model always brings back memories of one author's undergraduate days when Artie the anarchist was a prominent campus character. Artie railed against a number of the university's core principles—class attendance, grades, deadlines—but he reserved his most vehement criticism for standards of any kind. All enterprises have their Arties, and our own has more than its fair share! Within an anarchy, individuals or small groups make their own decisions based only on their local needs. Anarchies are the bane of the existence of many IT groups and are expensive to support and secure. Formally sanctioned anarchies were rare but existed in our study and were supported where very rapid responsiveness to local or individual customer needs was required.

How the Typical Enterprise Governs IT

We studied both who made each of the five decisions and who provided input to those decisions. We then categorized the enterprise's approach by archetype (see figure 3-2). Figure 3-4 lists the percentages of enterprises that used each governance archetype for each decision. The percentages in each column add to 100 percent. The darker shaded cells in figure 3-4 indicate the most common or typical governance patterns, with the shaded, bordered cells highlighting the most common decision-making patterns.

The most common governance pattern allowed for broad-based inputs with decision rights allocated to different groups depending on the decision. For the three more business-oriented IT decisions (principles, business application needs, and investment), more than

FIGURE 3-4

How Enterprises Govern

DECISION \ ARCHETYPE	IT Principles		IT Architecture		IT Infrastructure Strategies		Business Application Needs		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy	0	27	0	6	0	7	1	12	1	30
IT Monarchy	1	18	20	73	10	59	0	8	0	9
Feudal	0	3	0	0	1	2	1	18	0	3
Federal	83	14	46	4	59	6	81	30	93	27
Duopoly	15	36	34	15	30	23	17	27	6	30
Anarchy	0	0	0	1	0	1	0	3	0	1
No Data or Don't Know	1	2	0	1	0	2	0	2	0	0

□ Most common input pattern for all enterprises. ■ Most common decision patterns for all enterprises.

The numbers in each cell are percentages of the 256 enterprises studied in twenty-three countries. The columns add to 100 percent.

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80 percent of enterprises provided inputs through a federal governance model. Committees, budgets, and cross-functional process teams presented opportunities for input and feedback on these IT decisions. Federal structures also supported input to the more technical IT decisions, but enterprise approaches to input on these technical issues were more varied. Duopolies were also a popular approach to input for technical decisions. The duopoly approach to input for technical decisions sought similar objectives as the federal approach, but the federal approach involved all business units together and the duopoly used a set of bilateral business unit IT relationships.

In addition to collecting internal input for decisions, many firms also looked externally. Vendors, business partners, consultants, industry associations, universities, and other groups provided input. We do not generally recommend that external bodies (with the exception of for not-for-profit enterprises, discussed in chapter 7) be given decision rights for key IT decisions, as occurs in some outsourcing arrangements. But external sources often provide invaluable input.

Compared to input processes, decision rights were much less uniformly managed across different enterprises. We describe these variations for each decision domain.

Typical Governance Arrangements for IT Principles

IT principles, which set the strategic role for IT across the enterprise, were decided in a variety of ways. Thirty-six percent of enterprises used a duopoly approach (usually IT professionals and the CxOs in a T-shaped duopoly), but business and IT monarchies and federal approaches were also regularly used. We suspect that duopolies in general and senior management IT duopolies in particular have gained favor in IT principles decisions because senior managers sense that they must take the lead to ensure that IT aligns with business strategies. Working in partnership with IT leaders in the decision process establishes realistic expectations for IT and forces clarification of business strategy. An IT duopoly also secures the IT unit's commitment to business principles. Just as important, senior executives allow IT to shape business principles by reflecting

IT capabilities already in place or under development. Thus, duopolies are structured to leverage IT competencies in future-oriented principles and strategies.

Like duopolies, business monarchies also enhance the likelihood that IT principles will be aligned with business strategy. The leadership of the CxOs greatly enhances the likelihood that principles will be observed. But business monarchies are not without risks. Senior managers can establish principles without providing the governance processes, funding levels, and organizational structures to achieve them. The involvement of IT-savvy senior managers or the presence of a strong CIO on the executive team lessens these risks.

Federal models for IT principles ensure business units a strong voice in defining the role of IT. This voice is particularly valuable where business objectives highlight the importance of business unit autonomy. To balance the different interests of the central core and the business units, some enterprises start with defining the role of IT. Clear principles stating how IT will support both the center and the business units (perhaps via a combination of shared services and local IT units) can ease the difficulty of applying the federal model to other decisions (for example, business application needs).

The 18 percent of enterprises vesting responsibility for IT principles in IT monarchies were assuming significant risk. If business objectives are clearly stated, IT professionals might easily translate strategic objectives into appropriate IT principles. We have seen very effective business/IT relationships that permitted senior management to hand off IT principles to IT leaders. However, an IT monarchy taking responsibility for IT principles is best positioned to develop technically sound but strategically unimportant principles. These principles will lead to an efficient but not a business-enabling architecture. In addition, IT monarchies making decisions on IT principles are positioned to take the blame if systems do not generate anticipated benefits. Worse, because business managers have abdicated responsibility for defining targets, IT may well encounter difficulties in getting business managers to accept responsibility for generating the benefits—which usually means there will be few benefits. Regardless of the capabilities IT delivers, if business leaders do not assume responsibility for converting them into value, the risk of failure is high. With high risk comes the likelihood of frustrated

business leaders who often respond by replacing the IT leadership or abdicating further by outsourcing the whole “IT problem.”

Typical Governance Arrangements for IT Architecture

Over 70 percent of enterprises rely on IT monarchies to choose IT architecture, suggesting that senior managers view architecture more as a technical than a strategic issue. Most enterprises attempt to incorporate business strategy considerations into architecture decisions via inputs from federal and duopoly arrangements. However, the dominant decision-making role of IT in architecture decisions suggests that business managers feel unqualified, uninterested, or unneeded—they are confident that IT professionals can translate IT principles into an architecture. IT professionals are typically quite comfortable taking responsibility for architecture decisions. At many of the enterprises we have studied, an IT-only team—often with IT representatives from individual business units—is responsible for designing and managing the architecture, which it then communicates to the entire enterprise.

Another 15 percent of enterprises make architecture decisions using duopolies. These duopolies are typically a partnership between the CxOs, who provide the strategic horizon, and IT professionals, who provide the technical and often organizational input—a T-shaped duopoly. The duopoly approach is an overt recognition of the dual business and technical nature of architecture decisions.

Typical Governance Arrangements for IT Infrastructure Strategies

Like architecture, infrastructure strategy decisions are often made within the IT unit. Almost 60 percent of enterprises used IT monarchies to make infrastructure decisions. This arrangement gives IT independence in designing and pricing service offerings. Johnson & Johnson’s Networking and Computing Services (NCS) unit provides centralized infrastructure services for many of J&J’s operating units. However, because NCS must effectively sell its services to the operating companies, its customers’ demands strongly influence it.

At J&J, these demands are most often articulated by the IT people at the operating companies. At many enterprises, however, significant input comes from federal and duopoly arrangements. Effective IT monarchies design infrastructures to address and support the application requirements of business units.

Almost a quarter of the enterprises used a duopoly to make infrastructure strategy decisions. Duopolies are well suited to relatively quick negotiation of the business, technology, and political issues associated with shared infrastructure services. For example, Schneider National, a large U.S. trucking firm, uses regular meetings of senior managers and key IT leaders to define infrastructure requirements. These meetings allow senior managers to share evolving strategies with IT executives, who can identify deficiencies in existing capabilities and propose how the firm might leverage the technology it has in place. The process makes IT people more business savvy and business people more IT savvy.

Typical Governance Arrangements for IT Business Application Needs

People who make business application needs decisions specify the business needs for systems to be acquired or built in the next year or so. Enterprises in our study displayed a wide variety of approaches to these decisions. Federal approaches were slightly more popular than duopolies, and there were also substantial numbers of enterprises using feudal and business monarchies.

Federal models consider enterprise objectives in the process of deploying local business applications. In a federal model, implementations of local business applications may replicate or customize software adopted enterprisewide. For example, one pharmaceutical firm purchased an ERP for the entire enterprise, but except for a small set of firmwide data definitions (for example, financial data), it did not standardize the application across its regional business units. The central team developed a model and then helped local teams configure it according to their unique needs. This arrangement allowed for shared expertise across the firm but opted for the benefits of local customization over global standardization.

IT duopolies, typically bicycle wheels, were used by 27 percent of the enterprises. These duopolies give a stronger voice to IT in

business application decisions, which may reflect the greater role of architecture standards in limiting the number of choices considered for purchased applications. For example, at Commonwealth Bank of Australia, Australia's largest bank, with several major business units, the central IT architecture team reviews all business application proposals. During one review, the team observed that multiple business units were proposing similar functionality across multiple front-end customer service platforms. The architecture team extricated the common requirements and proposed a common approach that eliminated U.S. \$20 million from the business units' combined application proposal budget requirements. IT involvement in business application decisions increases the likelihood that both technical standards and existing IT infrastructure capabilities influence the choice of applications.⁵

Business application needs is the only decision where a significant number of enterprises (18 percent) use a feudal model—independent business units decide for themselves. Feudal models allow for high business unit autonomy and permit business units to move faster when they find packages or define requirements to meet a unique business need. In some enterprises the feudal model for business application needs was balanced with more centralized governance for IT principles and IT investment (for example, business monarchy).

At 12 percent of the enterprises, business monarchies make application needs decisions. Dow Corning took this approach to the implementation of its enterprise resource planning system. Committed to a global supply chain, management developed a single instance of the software, which was installed at all 109 sites.

Typical Governance Arrangements for IT Investment and Prioritization

Three approaches dominate IT investment and prioritization decision making—business monarchies, federal, and duopolies. The three approaches are almost equally popular, but they offer different views of how enterprises ensure maximum value from IT investments. That only 9 percent of enterprises place IT investment decisions in the hands of IT professionals reflects the growing awareness that IT investment decisions involve business tradeoffs—

decision makers determine which business processes will and will not receive IT support.

Business monarchies are well positioned to define and fund business priorities. Business monarchies are typically also responsible for overall capital budgeting decisions. Thus, vesting responsibility for IT investment and prioritization in a business monarchy allows IT projects to compete for funds with other organizational needs. The competition for funding facilitates an integrated view of the enterprise's key assets (physical, human, relationship) and is aided by an enterprise investment committee that looks at all major investments.

Federal approaches to IT investment balance enterprisewide priorities with business unit priorities. At one enterprise, over 80 percent of IT investment funds were allocated by the senior management team, but the functional units each had an "allowance" for business unit priorities. In contrast, firms with highly autonomous business units fund most IT from their regional offices, using occasional central funding to address strategic global needs.

Duopoly approaches (often T-shaped committees) to IT investment recognize that the IT unit is uniquely positioned to identify the risks posed by the existing IT infrastructure and the opportunities for sharing and reuse across business units. Thus, the involvement of IT in investment decisions provides a longer-term view of the implications of currently funded projects. Senior executives can simultaneously ensure that priority projects are "staged" according to the need for and availability of needed infrastructure. Enterprises with strong duopolies can group projects requiring new infrastructure capabilities. This process allows faster payback on infrastructure because major infrastructure investments are delayed (as are the applications requiring them) until a critical mass justifies the investment.

Analyzing Different Governance Patterns Across Enterprises

This first look at the data from our study reveals some broad patterns. For example, few enterprises govern with anarchy or feudal approaches. Many enterprises allocate responsibility for architec-

ture and infrastructure decisions to IT specialists. Overall, however, we found significant variation in governance patterns. Variations result from a number of factors:

1. *Strategic and performance goals:* Effective governance attempts to reinforce desirable behaviors to achieve the enterprise's strategic and performance goals. Because each enterprise's goals are different, a wide variety of governance approaches are used.
2. *Organizational structure:* Traditionally, enterprises have relied on organizational structure to align decision making with enterprise goals and strategies. However, as enterprises attempt to address competing goals, expanding geographies, rapid change, and intense competition, organizational structures have provided inadequate support for strategy. Enterprises design governance to compensate for the limitations of structure. Given that organizations cannot rely on an organization chart to deliver strategy, they must identify processes and governance that transcend the organization chart.
3. *Governance experience:* Many enterprises are relatively early in the learning curve of IT governance effectiveness. Less-mature enterprises change governance more often and struggle with coordinating all their mechanisms. Individuals within enterprises also contribute different levels of expertise. IT executives learn about business strategy (and often force clarity) and business executives learn about IT capabilities through ongoing involvement in IT decisions.
4. *Size and diversity:* As enterprises grow and diversify—both geographically and organizationally—they introduce competing and even conflicting objectives. Desirable behaviors become less clear and more contingent on circumstances as an enterprise introduces competing objectives. Governance must address the tradeoffs presented by competing objectives. Thus, the governance approach is likely to change as the enterprise becomes more complex.
5. *Industry and regional differences:* Industry and regional differences create unique pressures on enterprises that are reflected in their IT governance. Decision-making cultures

vary considerably across different regions of the world, often complicating governance in global enterprises. The last section of this chapter explores these differences and provides the typical IT governance patterns by industry and region. To aid in comparison, a series of tables summarizing the different approaches to governance by region and industry are available.⁶

Finally, the variation in the governance arrangements reflects varying levels of governance effectiveness. Top-performing firms govern differently. We will explain the differences in chapter 5. Now we will review the governance arrangements of DuPont, DBS Bank, and Motorola—three excellent firms, all pursuing growth, each applying governance arrangements specific to their needs.

Case Study: DuPont

DuPont is a \$25 billion manufacturer of science-based solutions in industries spanning food and nutrition, health care, home and construction, apparel, electronics, and transportation.⁷ The company, which celebrated its two hundredth anniversary in 2002, has over 79,000 employees in seventy countries. DuPont is organized around six market-growth platforms, which are further divided into strategic business units. Despite difficult economic conditions, DuPont started its third century as one of twenty companies identified by *BusinessWeek* with the financial strength and flexibility to take advantage of the acquisition opportunities available during the bear market.

Financial strength is important to DuPont to fund the firm's oft-stated strategic intent of sustainable growth. DuPont divests product lines that are not positioned to grow, even when performance has been strong. To fuel growth, DuPont purchases smaller companies with unique technology and market know-how.

IT at DuPont is charged with enabling a vision for "One DuPont." This vision brings together the enterprise's diverse expertise to deliver innovative solutions to specific customer problems. "One DuPont" will also provide a single face to global customers who do business with multiple DuPont business units and product lines.

To address the information needs of its diverse business units, DuPont has a global architecture defining points of intersection among the businesses. A small set of “Big Rules” establishes the critical elements of the architecture.⁸ For example, one Big Rule specifies: “When creating enterprise communications and data sharing, use chemical industry standards for sharing that data back and forth.”⁹

To support the business vision and implement Big Rules, DuPont created enterprisewide infrastructure services such as channel management, telecommunications, security, desktop, and global applications services. Although corporate declared some application standards, such as Lotus Notes for collaboration and SAP for financials, organizational units define most of their application needs. Application needs may be defined at the regional, business unit, or product line level.

Most global infrastructure development at DuPont has been funded centrally, but business units eventually pay for all such services through chargeback processes. Business units make their own investment decisions to fund the significant variations in processes such as R&D, manufacturing, and distribution, and supply chain management.

DuPont’s enterprisewide IT governance (mapped onto the Governance Assessment Matrix in figure 3-5 and listing the critical IT mechanisms) reflects global market demands, the diversity of its businesses, and its emphasis on growth. A Governance Arrangements Matrix could also be drawn for each of DuPont’s six growth platforms.

IT principles are focused on delivering the “One DuPont” vision. The principles evolved from discussions between the senior executive team and IT leaders. One regional CIO described his role in defining strategy and principles as follows: “Many times I was educating on the potential of IT to play a different strategic role. And many times I was trying to take a piece of strategy and figure out how can we actually develop that and put it on the ground in a business process.”¹⁰

Architecture decisions result largely from the efforts of a global architecture team of forty IT professionals from all regions, business units, and IT competency centers. This team designs the rules and

FIGURE 3-5

How DuPont Governs IT

		DECISION									
		IT Principles		IT Architecture		IT Infrastructure Strategies		Business Application Needs		IT Investment	
		Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
GOVERNANCE ARCHETYPE	Business Monarchy										
	IT Monarchy			Arch. team	IT leaders	Comp. center	IT leaders				
	Feudal	Business unit						Business leaders			
	Federal									Senior execs. Business leaders	Corp. IT Business leaders
	Duopoly		Senior execs. Corp. IT					Senior execs. Corp. IT			

☐ Most common pattern for all firms.

Governance mechanisms:

Arch. team—Forty IT experts from across company

Business leaders—Business unit leaders

Business unit—Business and IT leaders in business units

Comp. center—Global IT competency center representatives

Corp. IT—CIO and four direct reports

IT leaders—Corporate IT and fifteen business CIOs

Senior execs.—Senior Executive Team, including CIO

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policies embodied in the architecture and makes recommendations to DuPont's IT Global Leadership Team (IGLT), consisting of approximately fifteen of the top IT leaders across the businesses and regions. DuPont IT managers note that every IT leader must work closely with business leaders and must represent the business units as well as the enterprise in architecture decisions. This capability for IT to represent the business stems from the operational and reporting roles of business unit IT leaders.

DuPont's IT leaders make infrastructure decisions offering shared services to business units and forcing any business units that prefer

not to leverage the shared services to present an argument justifying their uniqueness. Business units must pay for these services, so they want to negotiate their needs with the central infrastructure team. As with architecture, most of these negotiations occur between local and corporate IT staff, who must represent business needs. Thus, like architecture, DuPont governs infrastructure through IT monarchies for both decisions and input. Infrastructure within DuPont exists at several levels. In addition to the enterprisewide infrastructure considered here, the strategic business units develop their own infrastructure with their own governance arrangements. The firmwide architecture governance ensures compatibility among the multiple levels.

Because business application needs vary significantly across business units, most of the decisions on business applications—as well as the responsibility for implementation—lie within business units. DuPont corporate mandates some vendor packages, but business units have discretion in the implementation. Thus, the feudal approach best describes business application decision making at DuPont. The enterprisewide applications defined by corporate business and IT management influence these decisions, however, making the input process primarily a duopoly.

Finally, IT investment decisions result from negotiations between corporate and business unit executives. These negotiations involve IT executives as well as business executives, but the involvement of both corporate and business unit leaders makes investment decision making a federal process. Business units and corporate also provide input to the investment process, making the input, like the decision, federal.

In summary, DuPont's global scale, growth targets, complex structure, and "One DuPont" strategy have led to feudal decisions on application needs balanced by a federal investment approach. Because of its size and global diversity, DuPont relies more than other companies in the study on IT professionals to represent business needs. DuPont still values alignment between IT and business strategy, but it relies more heavily than other enterprises on IT professionals to define solutions for business opportunities.

Case Study: DBS Bank

DBS Bank is Singapore's leading bank, serving over 4 million customers in Singapore, Thailand, Hong Kong, Indonesia, and the Philippines.¹¹ Like DuPont, DBS's strategy focuses on growth, specifically positioning the bank to become a leading Asian regional franchise.

DBS intends to facilitate growth, in part, by rapidly shifting acquired banks onto the DBS platform. Accordingly, DBS is building an enterprisewide platform with common technology, data definitions, and metrics. While accountability for performance will remain at the local level, senior management mandates synergies across the banks. Management's vision for the future is a "network of relationships" rather than bricks and mortar. The enterprise platform is central to enabling the banks to provide a consistent set of DBS services according to local needs.

IT efforts at DBS are guided by a set of principles encompassing governance, data ownership, and architecture. DBS's new architecture defines fifteen infrastructure services to be provided enterprisewide. An exception process enables development teams to occasionally go outside architecture standards, although the architecture is expected to then incorporate the new requirements. Development teams are centralized and work with architecture "case workers" to ensure an architecturally sound approach to all application development.

IT investment falls into three investment tiers—the same way DBS handles all capital investments. Business unit heads have authority for investments under Singapore \$1 million. Regional project councils, comprising key IT and business managers, review projects in the S \$1 million to S \$5 million range. The corporate office handles all projects over S \$5 million, although all IT-related investment decisions are made on the recommendation of the group CIO. Every major initiative is assessed on both financial and nonfinancial objectives. IT governance at DBS Bank is mapped onto the Governance Assessment Matrix in figure 3-6.

Despite sharing a vision of growth, DBS and DuPont take quite different approaches to IT governance. Much of this disparity probably relates to industry differences in how firms grow. DuPont in-

FIGURE 3-6

How DBS Bank Governs IT

GOVERNANCE ARCHETYPE	DECISION									
	IT Principles		IT Architecture		IT Infrastructure Strategies		Business Application Needs		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy		Corp. office CIO						Corp. office CIO		Project council Corp. office
IT Monarchy				Arch. office	CIO IT leaders	CIO IT leaders				
Feudal										
Federal							Business leaders Business process owners			
Duopoly	Business leaders IT leaders		Business leaders IT leaders						Business leaders IT leaders BT managers	

☐ Most common pattern for all firms.

Governance mechanisms:

Arch. office—Office of architecture
 Business leaders—Business leaders
 Business process owners—Business process owners
 BT managers—Business technology relationship managers

CIO—CIO office and staff
 Corp. office—Corporate office (CEO, CIO, three business heads)
 IT leaders—IT leadership group
 Project council—Regional project councils

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novates and acquires new businesses along business unit lines. Needing to support the individual growth of its strategic business units leads DuPont to a feudal business application governance model and a duopoly for principles that leverage and guide IT behaviors. DuPont uses a federal model for investment, however, to ensure that both enterprisewide and business unit objectives receive IT support. In contrast, DBS grows by replicating standard business components, so strategic business decisions are centralized

in the business monarchy while technical decisions are centralized in IT. As a result, DBS can grow rapidly in the region while also competing as a low-cost provider of services.

Case Study: Motorola

Motorola offers an example of a company pursuing growth while managing the inherent security issues.¹² Motorola is a global leader in providing integrated communications and embedded electronic solutions. Celebrating its seventy-fifth birthday in 2003, Motorola consists of six sectors covering telecommunications equipment, software solutions, and services, as well as semiconductor products and integrated systems. Motorola is rebounding from very difficult market conditions over the last couple of years, following the extraordinary telecom and dot-com boom in the late 1990s. With 2002 sales of \$27.3 billion, Motorola is attempting to return to what the CEO refers to as steady, rational growth with “real products serving real needs in real marketplaces.”¹³ Motorola is number one or two in its key markets, and management believes the firm is poised for growth as the global economy recovers. Growth for Motorola will result from leveraging strong customer relationships and from continued innovation in software applications and products.

Because the software and telecommunications industries are particularly vulnerable to security risks, Motorola management believes that information security is critical to its growth objectives. Management defines information security as protecting information and systems from failures of availability, confidentiality, and integrity. Motorola has committed to information security in both its operations and its products. This commitment has made information security a senior management issue and an integral part of IT governance at Motorola.

IT governance at Motorola relies on close IT-business relationships at both the corporate and sector level. The CIO is on the executive team and participates in decisions on principles and investment with the Management Board. The CIO's leadership team consists of the heads of architecture, infrastructure, enterprise applications, and security and the CIOs of the six sectors. The CIO's

leadership team is responsible for both architecture and infrastructure decisions. Business application decisions involve negotiations between corporate IT leaders, sector IT leaders, and business unit heads in a duopoly arrangement. Motorola's IT governance arrangements are shown in figure 3-7.

Motorola's Corporate Information Security Officer, who reports to the CIO, joins the CIO at quarterly Management Board meetings. In these meetings, the security officer details Motorola's security risks and alternatives for addressing them. A key element of information security governance is ongoing education. The security officer has worked with senior management on how to think

FIGURE 3-7

How Motorola Governs IT

	DECISION									
	IT Principles		IT Architecture		IT Infrastructure Strategies		Business Application Needs		IT Investment	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
GOVERNANCE ARCHETYPE	Business Monarchy									
	IT Monarchy			IT leaders Security leaders		IT leaders Security leaders				
	Feudal									
	Federal	Business leaders					Sector IT Business leaders		Sector IT Business leaders	
	Duopoly		Mgmt. board IT leaders	CIO staff Sector IT		CIO staff Sector IT		Business leaders Sector IT CIO staff		Mgmt. board IT leaders

□ Most common pattern for all firms.

Governance mechanisms:

Business leaders—Business unit leaders within sectors
CIO staff—CIO staff
IT leaders—CIO's four direct reports, six sector CIOs

Mgmt. board—Senior executive team, including CIO
Security leaders—IT leadership and security staff
Sector IT—Sector CIO staff

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about both the likelihood of various security breaches and the potential impacts of each threat on the business.

As with other areas of IT governance, the Management Board establishes security principles and defines priorities. The Board specifies the security budget separately from the rest of the IT budget. Motorola implements its security plans at both a corporate and a sector level. The security officer's staff designs and builds appropriate technology. Security staff members also work with IT architects at both the corporate and the sector levels to ensure that security measures are seamlessly built into infrastructure and applications.

The security-based governance initiatives at Motorola provide an example of how enterprises govern to address strategic issues. Motorola's security concerns are reflected in its organizational structure and roles, governance arrangements, and specific architecture processes. Many enterprises are concerned with security, but Motorola has made it a strategic priority. Its governance arrangements ensure that security considerations are built into desirable behavior.

The three cases also illustrate how different sets of IT mechanisms can be used to effectively implement governance. The Governance Arrangements Matrix for each firm identifies the mechanisms through which the firm implements its governance arrangements. For example, DuPont uses mechanisms like an architecture team of forty experts and global IT competency centers. DBS's mechanisms include an office of architecture and regional project councils. Motorola uses mechanisms including a management board and security leaders. In the next chapter we examine the mechanisms used to implement IT governance and how they work—both independently and together.

Industry and Regional Differences in IT Governance

As the DuPont, DBS, and Motorola cases demonstrate, "typical" profiles of IT governance do not serve as generic guidelines for governance. Many factors influence governance requirements. Industry and region are two of the factors.

To illustrate some of the industry differences, compare the for-profit with the not-for-profit and government sectors. Measuring performance is challenging and much less clear in the government and not-for-profit sectors. This difference affects the organization's culture and each individual's sense of accountability as everyone works to provide service that is justified on legislative or social merits and affordability rather than impact on future sales or profits. The differences in governance between the for-profit and the government and not-for-profit sectors reflect these differences in culture, measurements, and accountabilities. For example, the not-for-profit and government sectors use significantly more business monarchies for IT principles and IT investment decisions than do for-profit enterprises. The heavier use of business monarchies reflects the more centralized decision-making process in some types of government and not-for-profit enterprises, such as emergency response, taxation, and defense. The multiple and often conflicting objectives of not-for-profits demand strong direction from the center. The decision-making power of the CxOs might also result from different attitudes toward risk management and empowerment. Government and not-for-profit enterprises also rely more heavily on federal models for business application needs decisions. Federal models for business applications allow the central leadership to ensure that the enterprise's objectives are considered, while recognizing that functional units have unique IT requirements for fulfilling their respective objectives. Chapter 7 extends the discussion of how government and not-for-profit enterprises apply governance to meet their strategic objectives.

Other industry differences are also apparent. For example, financial services firms rely more on duopolies and, to a lesser extent, IT monarchies for decisions on IT principles than does the "typical" enterprise. The heavy involvement of IT professionals in principles decisions probably results from the nature of the product. In financial services, information is the product. Thus, IT has historically played a strategic role in financial services enterprises. The financial services industry also distinguishes itself from the "typical" enterprise by its significantly lower reliance on federal governance for IT decisions. The federal model is heavily used for input on IT decisions at financial services firms so that both shared

functions and individual business units influence decision making. But federal decision-making approaches are rare, probably because many full-service firms are organized around individual product lines. Financial services firms have a significantly higher use of feudal approaches to business application needs decisions than do “typical” enterprises. The feudal approach may be a historical artifact from the product line focus that, until recently, was common in the financial services industry.

Governance arrangements for the telecommunications and utility industries are similar to the arrangements in government and not-for-profit enterprises. The telecommunications and utility industries use business monarchies more than is “typical” for IT principles and IT investment decisions. Use of federal decision making for business application needs is considerably higher in the telco and utility industries than in any other industry.

Manufacturing firms, in contrast, rely more on duopolies for business application needs, probably because business applications in these industries require an increasingly seamless supply chain. IT involvement in business applications can clarify the capabilities and limitations of the existing infrastructure and build new infrastructure to support new applications. Manufacturing firms rely more than other industries on a federal approach to IT investment decisions. This governance probably reflects the unique needs of different product lines, functional departments, and regional offices, while simultaneously ensuring the robustness of the central supply chain and the ability to address the needs of large, geographically dispersed global customers.

We found that regional differences were not as pronounced as industry differences, probably because many of the firms in the sample were global firms, which diminishes the presence of regional differences. European firms tended to rely more heavily on business monarchies for principles, perhaps reflecting the need to clarify how IT would enable coordination across business units. The twenty-seven Asia-Pacific firms in the study demonstrated a greater propensity to adopt federal governance patterns and lower use of IT monarchies. American firms had a stronger business unit influence, particularly in business application needs.

Making Sense of “Typical” IT Governance Design Profiles

Comparisons are a starting point to IT governance design. To commence the process of assessing governance design, we have found that the most useful approach to using our results is to ask the question: Can you explain the difference between your enterprise's governance and the most common approach? You might also want to compare your governance design to the most common approach in your industry or region. Convincingly describing the difference is an indicator of good harmony between your governance and your strategy. An inability to describe the difference indicates a need to rethink governance design in your enterprise.

Appendix

Measuring Governance Performance

TO QUICKLY ASSESS IT governance performance for an enterprise, ask the senior management team—we recommend at least ten managers—to answer the following questions. Then average the results and look at variation by business units and level of management. The formula for calculating governance performance follows the questionnaire.

Governance Performance Survey

The goal of this survey is to assess the effectiveness of your enterprise's IT governance. We define IT governance as *specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT*. Please answer these questions for the part of the enterprise for which you are responsible.

1. How important are the following outcomes of your IT governance, on a scale from 1 (Not important) to 5 (Very important)?

Governance Outcome	Not Important				Very Important
	1	2	3	4	5
Cost-effective use of IT	☐	☐	☐	☐	☐
Effective use of IT for growth	☐	☐	☐	☐	☐
Effective use of IT for asset utilization	☐	☐	☐	☐	☐
Effective use of IT for business flexibility	☐	☐	☐	☐	☐

2. What is the influence of the IT governance in your business on the following measures of success, on a scale from 1 (Not successful) to 5 (Very successful)?

Success Measure	Not Successful		Very Successful		
	1	2	3	4	5
Cost-effective use of IT	☐	☐	☐	☐	☐
Effective use of IT for growth	☐	☐	☐	☐	☐
Effective use of IT for asset utilization	☐	☐	☐	☐	☐
Effective use of IT for business flexibility	☐	☐	☐	☐	☐

3. What are the areas where IT governance works best? Why?
4. What are the areas where IT governance is not effective? Why?

Calculating Governance Performance

Question 1 assesses the importance of a particular outcome and question 2 assesses how well IT governance contributed to meeting the outcome. Since not all firms rank the outcomes with the same importance, the answers to the first question are used to weight the answers to the second question. Then the weighted scores for the 4 questions are added and divided by the maximum score attainable by that enterprise. Therefore, mathematically, governance performance =

$$\frac{(\sum_{n=1 \text{ to } 4} (\text{importance of outcome}\{Q1\} * \text{influence of IT governance}\{Q2\})) * 100}{\sum_{n=1 \text{ to } 4} (5 (\text{importance of outcome}))}$$

Given that there were four objectives, the maximum score for all enterprises is 100 and the minimum score is 20. The average score from 256 enterprises was 69 with the top one third of enterprises scoring over 74.

Notes

Chapter 3

1. The average of eight business units was calculated after removing the top and bottom 5 percent of enterprises in terms of the number of business units to correct for very large and very small enterprises, thus giving a better picture of the average. The average without trimming was eleven business units.

2. The feudal entity varies by enterprise and industry with our estimate of the most to least common being business unit, region, function, and business process.

3. For an excellent discussion of the federal model of organizations, see Charles Handy, "Balancing Corporate Power: A New Federalist Paper," *Harvard Business Review* (November–December 1992): 59–72.

4. By duopoly we mean "control or domination by two persons or groups," as defined by the *Oxford English Dictionary*, Second Edition, 1989 http://dictionary.oed.com/cgi/entry/00070944?single=1&query_type=word&queryword=duopoly&edition=2e&first=1&max_to_show=10 (accessed 30 May 2003).

5. Discussions of IT governance at Commonwealth Bank of Australia draw on a personal interview with Peter Reynolds, then Chief Technology Officer, on January 30, 2003.

6. Tables showing industry and regional differences among the enterprises in our study are available at the following Web site: <<http://web.mit.edu/cisr/itgovbookreferencelinks.htm>>

7. Discussion of DuPont's IT governance draws on a set of interviews with four DuPont executives conducted by the authors during the period September–November 2001.

8. For an excellent discussion of "Big Rules," see Peter G. W. Keen, "Information Technology and the Management of Difference: A Fusion Map," *IBM Systems Journal* 32, no. 1 (1993): 17–39.

9. Personal interview between the authors and William Kirkey, DuPont's Chief Technology Officer, October 19, 2001.

10. Personal interview with DuPont IT executive, October 1, 2001.

11. This material is adapted from Marianne Broadbent and Peter Weill, "Effective IT Governance. By Design," EXP Premier Report, January 2003, and is used with permission.

12. Discussion of IT governance at Motorola draws on personal interviews with Motorola IT executives on and before April 24, 2003.

13. Excerpted from the Chairman and President's Letter to Stockholders in the Motorola 2002 Annual Report as listed at Motorola.com on April 23, 2003.