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ALIGNING THE IT HUMAN RESOURCE WITH BUSINESS VISION: THE LEADERSHIP INITIATIVE AT 3M[1, 2]

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Abstract

Increasingly, business leaders are demanding that IT play the role of a business partner and a strategic enabler. In such an environment, IT human capital has assumed considerable significance. Insightful IT leaders recognize that the greatest impediments to success are often related to people rather than to information, technology, and systems. What is not quite clear to IT leaders, however, is exactly how to develop and leverage this human capital in support of business needs. The transformation of IT from a back-office support role to a strategic business partner requires new roles and competencies *for IT leaders and professionals. Key challenges for IT leaders are to envision these roles and competencies and to develop and implement programs to translate this vision to reality. This paper describes the IT human resource vision that is guiding such a transformation at 3M—a large multi-product, diversified manufacturing firm (1998 sales: $15 billion)—and focuses on the implementation of its leadership initiative. This initiative was instrumental in not only allowing 3M to develop needed skills and behaviors among its IT professionals, it also helped 3M evade an industry-wide recruitment and retention trend. The major conceptual models guiding the leadership initiative as well as implementation details are presented. Challenges encountered on the way and the lessons learned from the journey are discussed. 3M's experiences provide opportunities for managers in other organizations to develop valuable insights regarding the management of human capital in IT.*

Keywords: Information systems professionals, leadership development, human resource strategy, managing IT professionals, recruiting and retaining IT professionals

ISRL Categories: EB, UF, USE, EH0201, EH0206, EH0207

[1]Robert Zmud was the accepting senior editor for this paper.

[2]This paper won first place in the 1998 SIM Paper Competition.

IT Human Resource Challenges and Their Significance

It has been suggested that in the face of an increasingly turbulent business and technology environment, the keys to success for the 21st century information technology organization might well lie in its ability to be adaptive, responsive, and aligned to business needs (Ross et al. 1996). Accelerating pressures to assume the role of a partner, or perhaps even a leader, in driving business strategy is forcing chief information officers to reconsider the role and responsibilities of their information technology (IT) organizations. In today's global and digital economy (Tapscott 1996), business leaders often look toward IT to suggest new and innovative ways in which internal and external processes might be improved. Indeed, a common view is that IT can serve as a key source of competitive advantage (Ross et al. 1996). As information technology organizations reposition themselves to become strategic business partners, it is evident that they require a new set of capabilities that will enable and facilitate such a transition (Clark et al. 1997).

Although prior work provides alternate conceptualizations of what these capabilities might be, there is some agreement that a firm's IT *human capital* constitutes a critical capability that needs to be appropriately managed and nurtured for successful business partnerships (Mata et al. 1995; Ross et al. 1996). Indeed, there is broad recognition in the research literature that in the new knowledge economy, the human capital of a firm, i.e., its workforce, may well represent its most important strategic asset and capability (e.g., Stewart 1997). Not only is this capital an enabler of organizational change, it is also the mechanism through which greater organizational effectiveness can be achieved.

A transformation of the IT organization so that it is more closely aligned with the business and can serve strategic ends has wide-ranging implications for the skills, behaviors, and orientations of IT staff. IT professionals are now increasingly asked to assume entrepreneurial roles and to seed the process of IT innovation. A broad-based expectation is that rather than wait for the business to provide requirements, IT professionals will proactively seek to create opportunities for the deployment of information technology to serve business needs. Moreover, with the increasing incidence of outsourcing in IT work, IT professionals are now key players in the complex activity of managing a host of relationships with external vendors and consultants in addition to managing internal relationships with business partners. These new responsibilities demand an IT *workforce* that possesses strong partnering skills, is motivated, willing to change, and empowered to act without overt, persistent guidance.

How can IT leaders develop a workforce that is capable of fulfilling a strategic role? The purpose of this article is to describe and reflect upon the experiences of one organization—3M—in its journey toward transforming IT to a strategic business partner. A key element of this journey is the development of business-aligned, entrepreneurial leadership skills, competencies, and behaviors among the entire IT staff. We describe 3M's success and struggles, and the strategies and tactics employed. 3M's experiences provide opportunities for managers in other organizations to develop valuable insights regarding the development of IT human capital.

The paper begins by describing the environment at 3M prior to the beginning of the transition. It then presents the leadership imperative at 3M designed to achieve three related objectives: (1) to transform the relationship between IT managers and IT workers, (2) to develop an empowered IT workforce that is capable of contributing in meaningful ways to the new, strategic partner role for IT, and (3) to develop an environment where IT professionals want to join and stay for an extended tenure. In addition to describing the fundamental conceptual models underlying the initiative, we also present evidence of its impact and reflect on the challenges encountered.

The Business Problem and Environment

IT constitutes an essential competence for many business organizations today. It has been com-

pellingly argued that IT can provide a source of sustainable competitive advantage in the next decade (Rockart et al. 1996). However, although IT leaders might recognize and value the competitive potential of information technology, such a sentiment is not necessarily widely shared by business leaders. That was the case at 3M—six years ago, prior to Dave Drew, the current CIO. Managers across the company did not recognize nor necessarily value the potential of IT for providing competitive advantage. IT constituted an essential support function at best, certainly not a strategic enabler nor an essential competence. Although the marketplace overwhelmingly recognized 3M as an innovator, 3M needed a fundamental transformation to make innovative use of IT. To understand this prevailing situation more fully, we provide an explanation of 3M and its culture as well as a brief history of IT at 3M.

3M and Its Culture

With its headquarters in St. Paul, Minnesota, 3M has operations in more than 60 countries. It has more than 70,000 employees who create, manufacture, and sell 50,000 products in 200 countries around the world. Some products, like Scotch™ Magic™ Tape, are brands found in households and offices all over the world. The company's research and development portfolio features 100 technologies, which include abrasives, adhesives, non-woven fibers, films, precision coatings, fluorochemicals, ceramics, optics, and microstructured surfaces.

Innovation is required and inextricably linked to success at 3M. Each year, 30% of sales must come from products less than four years old. Scientists are encouraged to spend 15% of their time pursuing their own ideas. The ever-popular Post-it® Notes sprang from the 15% rule. Over the past five years, 3M has invested about $4.7 billion on research and development projects, nearly 7% of sales each year. In 1998 sales topped $15 billion.

The company's culture fosters a spirit of entrepreneurship. William L. McKnight, who became president in 1929 and chairman of the board in 1949, created a corporate culture that encourages employee initiative and innovation and provides secure employment. His basic rule of management was laid out in 1948:

> As our business grows, it becomes increasingly necessary to delegate responsibility and to encourage men and women to exercise their initiative. This requires considerable tolerance. Those men and women to whom we delegate authority and responsibility, if they are good people, are going to want to do their jobs in their own way."

Today, 3M is approaching the 21st century by focusing on technologies that possess clear competitive advantages and large growth potential. It is building on five key strengths of market leadership, technical innovation, customer focus, global reach, and employee initiative to advance the lives and businesses of its customers and provide an attractive return for shareholders. As noted in the Chairman's Letter in the 1997 Annual Report:

> Wide application of 3M expertise provides the foundation for our multiproduct, multimarket, multinational approach…. Although our businesses are highly diverse, they also are highly integrated in research and development, manufacturing, logistics, *information technology* and marketing. This integration stems from a deep-rooted culture in which 3M people identify customer needs, act on their initiative, and widely share technologies and other expertise.

IT and Its Evolving Role: Achieving Strategic Alignment Through Structural Change

3M's IT workforce today consists of 3,000 professionals worldwide, about 1,800 of whom are in the United States. Several contractors are utilized for specialized technical needs. In the application development group, as many as 55% to 60% of the staff are professional services contractors. IT governance at 3M follows a

federal model (Brown 1997). Most of the IT professionals are located in a centralized corporate IT organization; however, 3M also has information technology positions in its autonomous business units and manufacturing plants. The central IT organization defines the technical architecture, designs and supports the technology infrastructure, and develops corporate-wide information system solutions. The business units and plants, in turn, develop support systems pertinent to unique staff or business needs.

As the Chairman's letter points out, IT is conceptualized as an essential, integrating function at 3M. Interestingly, that has not always been the role accorded to IT. In previous years, the IT organization was characterized as a "technical, back-office, buried-in-the-woodwork" type of organization. IT reported up through the Finance function and the highest IT executive occupied the position of an Executive Director. At that time, IT used to "wait for requirements to come hurtling over the wall." The organization was, at best, reactive.

The drive behind the transformation at IT came from Dave Drew, the current Chief Information Officer at 3M. His vision was that IT should be a strategic partner in the business, that executives should be asking how IT can enable the business to succeed, and they should be involving IT in decision making *as* decisions are being made, not *after* decisions are made. To accomplish this vision through better alignment of IT with the business, several structural and governance changes were instituted. As a first step to reflect increased business confidence in and dependence on IT, the role of the CIO within the overall 3M organization was elevated. Drew now reports to George Meredith, an Executive VP, who reports directly to the CEO at 3M. Moreover, Drew is a key member of the executive management team—a group of 11 vice presidents and the CEO—which is responsible for all strategic decision making at 3M. (See Table 1 for a summary of these and other transformations in IT.)

Not surprisingly, 3M is an extremely complex organization with about 40 divisions or business units plus various staff groups. Prior to Drew, each business unit and some divisions had autonomous CIOs. Although central IT was always a strong function, altogether the former 3M IT organization was exceedingly complex, with anywhere between 20 and 25 different and uncoordinated areas of IT responsibility. Drew sought to bring the distributed IT human capital under one umbrella organization, while simultaneously maintaining a tight linkage with key business partners. The underlying rationale was to achieve greater coherence and coordination in IT activities across the entire enterprise. IT governance has been radically changed with the staff units being brought under central IT control. With a view to serving business needs better, division IT functions have been consolidated into six IT areas around market centers. Each market center is responsible for a particular group of 3M's diverse product line. (See Figure 1 for a depiction of the organizational structure, with the six market center groups down the right-hand side.)

The head of IT located within a market center has a dual reporting responsibility to Dave Drew and to the business VP/market center head. Not only does this structure achieve the business alignment that Drew sought, it also serves the crucial end of developing a more cohesive IT structure. For example, prior to the reorganization, divisional IT presence on key committees within the central IT organization was exceedingly low, if not entirely absent. Now, key committees within IT, such as the planning and strategy committee, include all the market center IT directors.

A restructuring of the organization is but one element of strategic alignment. Besides realigning the organization, Drew recognized that 3M needed a fundamental transformation in its IT people to enable innovation and instill a spirit of entrepreneurship. At the same time, he and Bob Roepke, manager of IT's Communications, Consulting, and Professional Development group, began to experience labor market pressures related to recruitment and retention. Together they recognized that a new human resource vision was necessary to attain the goal of IT as a strategic business partner at 3M. The traditional IT human resource environment, where individual initiative and discretion in IT job performance were circumscribed, was viewed as antithetical to the development of entrepreneurial leaders within IT. Against this backdrop, the leadership initiative at 3M was launched.

Table 1. The Old Versus the New: Transforming IT at 3M

Transformation Target	Old 3M IT	The New 3M IT
Role of IT within 3M	Essential support	Strategic partner
Position of top IT executive	Director Title; reported through Finance Function	CIO Title; member of executive management team
IT organizational structure and governance	Loose coupling between distributed and central IT; large amount of autonomous IT activity within business units	Closer coupling between distributed and central IT; alignment of distributed IT with market centers
Client perceptions of IT	"Technical, back-office, buried-in-the-woodwork," "reactive," "late, or over budget, and not communicating requirements"	"A key business partner helping us enhance our customer interface, achieve our business goals, and enhance our productivity"
IT management style	Command and control, hierarchical	Participative, collaborative
Ties between management and IT professionals	Connected through a "job" contract: management outlines conditions for satisfactory performance and the worker complies at a minimum level of performance	Connected through a relationship: workers contribute because of a sense of commitment to the relationship
Attitudinal and behavioral change	Nominal leaders make all decisions	Everyone has responsibility for leadership; IT professionals are empowered to act on the vision of IT

An Innovative Approach to Transforming the IT Workforce: The Leadership Initiative at 3M

The Genesis of the Leadership Initiative

At 3M, Drew and others sought to elevate the role and performance of the IT function through the development of a pervasive and wide-ranging leadership capability. The elements of the leadership initiative at 3M IT took time to crystallize and emerge, with the impetus coming from diverse sources. Within IT's Operating Committee (comprised mainly of those reporting to Dave Drew [see Figure 1]), a desire to pay closer attention to leadership resulted in all of those leaders participating in a Tom Peters several-day experience in the fall of 1994. That was followed by the five principles of leadership (Kouzes and Posner 1987) being accepted as key leadership beliefs: encouraging the heart, challenging the process, modeling the way, inspiring and sharing the vision, and enabling others to act. The Operating Committee was so moved by their experience that the rest of the leadership, i.e., the Operating Committee and the next level down,

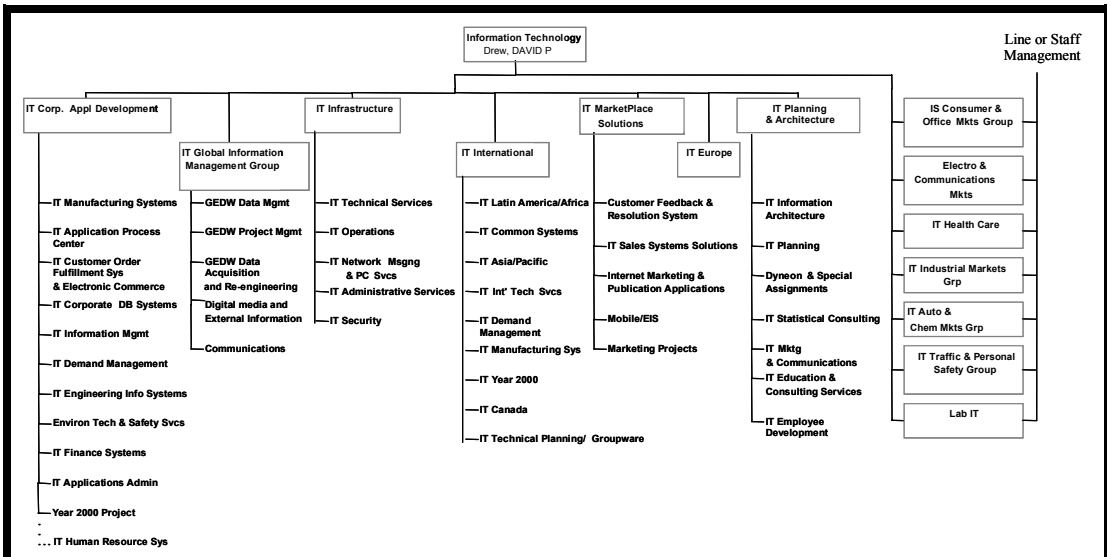

Figure 1. Information Technology Organizational Structure

went through a three day experience together in 1995. Then 1,000 IT professionals went through a mandatory one-day learning experience, "Leadership Is Everyone's Business," where they were encouraged to understand and apply the five leadership principles. Six months later, the Operating Committee asked, "Where do we go from here?" They realized that the broad-based approach of sending everyone to a one-time leadership program would yield only a marginal impact on the organization as a whole. As a result, the assignment to develop an *IT Leadership Development Center* came to Bob Roepke, Manager of the IT Communications, Consulting, and Professional Development group.

During this same time period, IT began to experience labor market pressures related to recruitment and retention. In early 1995, some key people were leaving for a variety of reasons, including the changing nature of the marketplace that now offered better opportunities. In the past, people would typically ask their managers how to get ahead. Back in the 1980s, key factors in promotions were the number of months an individual had in a job and the number of education credits. Promotions were handed out fast and furiously and IT professionals exhibited an "entitlement" mentality. With changes in the marketplace (e.g., the move toward leaner organizations), promotions became fewer and far between. Success was harder to achieve and reward. Critical questions arose for IT management at 3M: how do we get the best people, how do we keep the best people, and how do we get people to be their best while they are at 3M? Developing answers to these questions was part of the broader human resources, organizational, and leadership questions that needed to be addressed within Bob Roepke's area of responsibility.

> We needed to view these issues more holistically, provide some systemic thinking, and develop innovative approaches to building a motivated 3M workforce. We believe leadership is the key factor and must ensure that everyone is engaged in a journey of change.

Prior to describing the rich set of models that comprise the leadership initiative, it is instructive to examine the overarching philosophy guiding the initiative: that *everyone* has responsibility for leadership. The philosophy explicitly acknowledges that while technical competencies are no doubt critical for an IT function to succeed, the ability to be entrepreneurial and creative is

perhaps more important in a turbulent business environment. Although some people spend more time on leadership than others, the core idea is to help all IT professionals *align*. Alignment at 3M IT is viewed as consistency between what individuals desire from their own career development perspective, their skills, and the needs and direction of the IT organization. Thus, leadership development is envisaged as being applicable to all types of IT professionals, regardless of their position within the organizational hierarchy or the specific type of IT work they perform.

This notion that effective leadership is a critical element of firm success is not new. Over a decade ago, researchers in leadership suggested that organizational revitalization requires transformational as opposed to transactional leadership (Tichy and Ulrich 1984). While the latter was seen to be associated with maintenance of the status quo and existing organizational routines, in contrast, the former was regarded as potentially leading to fundamental organizational change. Tichy and Ulrich note that a transformational leader engages in at least three clearly identifiable programs of activity: the creation of a vision, the mobilization of commitment to the vision, and the institutionalization of change. In more recent work, Ashkenas et al. (1998) underscore the key role of leadership as an enabler of organizational change. In a similar vein, Lawler (1996), writing on the foundations of effective 21st century organizations, proposes that a new logic for structuring and managing organizations is necessary. He suggests that the key to organizational reinvention will be specific organizational capabilities that exist in the "systems, culture, relationships, and overall design of an organization" (p. 12). He also notes that effective leadership is a crucial organizational capability that should be proactively managed and developed.

At 3M, the drive toward the development of leadership capability was facilitated by a coherent and closely inter-related set of managerial models. We start with (1) the fundamental conceptual model of the new versus the old way that *managers and workers interrelate* (Figure 2) and (2) the *personal leadership model* (Figure 3) and curriculum that has been widely implemented to help 3M's IT organization move toward one where everyone exercises leadership responsibilities. We then provide a brief description of the *positional leadership model* (Figure 4) and experience with selectively implementing that piece of the change process. Finally, we present a conceptual overview of a more complete suite of leadership development services envisioned for the future, referred to as the *Shared Leadership Architecture* (Figure 5).

Transforming the Management-Worker Relationship: The Transition Model

The Transition Model (Figure 2) is a fundamental conceptual model of several transitions from an older style of management-worker relations to a newer model. The assumption underlying this model is that the traditional hierarchical, command-and-control management style will not work as effectively in the information age and the era of the knowledge worker. For an organization to thrive, it must create an environment that attracts people to *join* and to *offer their best* everyday. The diagram in Figure 2 provides an overview of three key transitions:

- from a command-and-control management philosophy to a more *collaborative* philosophy,
- from an environment where value is placed on the job to one where value is placed on *people* and their *competencies*, and
- from a workforce that offers compliance to a workforce that favors *participation*.

The leadership imperative requires managers to alter their leadership behaviors from a command and control approach toward one characterized by collaboration and participation. The movement from command-and-control to collaboration is consistent with many writings that focus on empowering those at the lowest hierarchical levels to be involved in critical decisions. For example, Senge (1997) notes that top-down directives do not foster genuine commitment that harnesses the courage, imagination, patience, intelligence, and

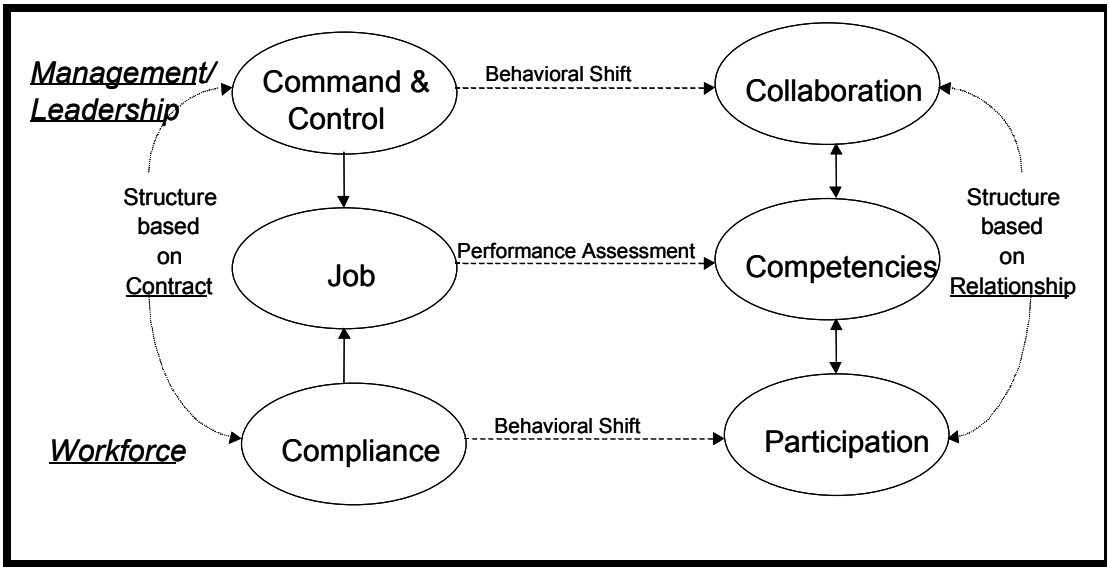

Figure 2. The Transition Model

spirit of people at all levels of an organization. Attempting to move the concept beyond a "catchy slogan," in the context of the empowerment of service workers, Bowen and Lawler (1992) define empowerment as comprised of four essential ingredients: increased information availability about organizational performance, rewards based on such performance, knowledge that enables richer employee contributions to performance, and the power to make decisions that influence performance.

Bowen and Lawler suggest that empowerment can be accomplished along a continuum depending on the degree to which information, power, rewards, and knowledge are made accessible to front-line workers. At one end of the spectrum, which they term "suggestion involvement," employees are encouraged to contribute ideas through suggestion programs and quality circles. No attempt is made, however, to introduce radical change in the day-to-day work of the organization. At the next level of empowerment, termed "job involvement," greater autonomy is offered in the performance of work. This level also entails an increased use of team structures to accomplish work. However, strategic decisions regarding organizational structure and the allocation of rewards are still vested in the hands of senior management. This is in contrast to "high involvement" organizations where, increasingly, all levels of workers are involved not only in the performance of their own work, but in the entire organization's performance.

At its core, 3M's transition model attempts to characterize a new, empowered IT workforce that engages in partnering behaviors. Not surprisingly, the need for commitment, where everyone has the freedom to act rather than waiting to be told what to do, arises because of dynamic markets, where change is occurring fast. This notion of fostering commitment among employees is echoed in the writings of Kouzes and Posner (1995), who refer to enlisting others through common purposes, fostering collaboration by promoting cooperative goals and mutual trust, and strengthening others by sharing power and information.

The contrasting human resource strategies of control and commitment (Walton 1985) are represented on the left- and right-hand sides of the Transition Model. Walton distinguishes between two types of employment or work force management systems: one that is premised on imposing control and a second that is focused on eliciting commitment. He also describes a transitional strategy, which characterizes the movement

from control to commitment. Each strategy is associated with a unique set of practices related to job design principles, performance expectations, management structures and systems, compensation policies, employment assurances, employee voice policies, and labor management relationships. Walton notes that although the commitment strategy exhibits positive effects on performance, it is not without costs. In particular, successful implementation of a commitment strategy requires considerable investment in training and development, in compensation, and in providing employment assurances.

At 3M, more stable, defined, structured jobs are seen as more appropriate on the left-hand side, where industry pressures do not dominate. Empowered self-leaders (Bowen and Lawler 1992; Sims and Manz 1996) are needed on the right-hand side, where dynamic market pressures dominate. On the left-hand side, the manager has a job description, i.e., a *contract*, which basically outlines the requirements for satisfactory performance. At the extreme, compliance means doing the absolute least that still meets the letter of the contract. Under this model, workers do what they are obligated to do and little else. Workers do not necessarily try to sabotage anything; rather, they do not contribute anything substantive over and above the contract. On the right-hand side, participation implies attempting whatever is necessary to make things work, and using one's potential to contribute. There is a sense of *relationship* to something bigger. It might be the relationship with the manager, with the others in the group, or with the goals of the group. Under this model, workers making a minimal effort at compliance feel dishonest, as though they are letting others down. The key measure of success here is contribution rather than performance alone.

The notion of different types of psychological contracts (Rousseau 1995), which refer to the employer-employee relationship, is relevant here. One type of psychological contract is called a transactional contract since it is based on a short-term exchange of benefits. Taking this model to its extreme yields similarities to the "structure based on contract" on the left-hand side of Figure 2. Another type of psychological contract is called a relational contract, which is based on the assumption of a long-term, mutually satisfying relationship. As its name implies, this model is similar to the "structure based on relationship" on the right-hand side of Figure 2. 3M's desire to have employees move from a transactional to a relational psychological contract appears to run counter to the direction that Rousseau sees psychological contracts moving in recent years. However, Hall and Moss (1998) see a group of companies that value an ongoing relationship with employees. These companies are providing resources and opportunities for core employees to grow and develop in their careers. Rather than being entitled to long-term employment, though, which many employees took for granted under the "old" relational psychological contract, employees must earn the organization's loyalty through high performance and an ability to learn continuously. Hall and Moss note that this new contract is described by words that emphasize growth, responsibility, empowerment, performance, and hard work. Indeed, managers at 3M strongly believe that a strength of 3M's culture is the loyalty that employees have.

This conceptual model has been used to guide other elements of the leadership initiative, e.g., to develop training materials that help build understanding of the changes needed in the way managers and leaders relate to one another. The orientation at 3M is that successful implementation of these transitions will be achieved through a change process that appeals to the *head and the heart*, not through non-volitional, mandated imperatives. Moreover, this change requires understanding and acceptance of the transitions by both those not in nominal leadership positions (i.e., IT professionals) and those in nominal leadership positions (i.e., IT managers). The vehicles for achieving such understanding are the Personal Leadership Model and the Positional Leadership Model.

Transforming the IT Workforce: The Personal Leadership Model

The transition model helps IT managers and others at 3M recognize the need for deep rooted behavioral changes that are necessary to move

the IT organization toward a new level of entrepreneurial leadership capability. Understanding and acceptance by IT professionals is built through the Personal Leadership Curriculum, which is driven by the Personal Leadership Model (see Figure 3). Personal leadership includes eight skills identified for successfully transforming IT: initiative, emotional self-management, co-operation, customer service orientation, self-confidence, achievement orientation, flexibility, and interpersonal understanding. Example behaviors for each skill were identified for IT professionals. Lyla Campbell, Employee Development Manager within IT Communications, Consulting, and Professional Development, and others at 3M identified these behaviors in a focused workshop setting by asking the questions: "How do good, contributing employees behave? What do they look like?"

Personal Leadership Curriculum Implementation and Its Impact

The Personal Leadership Curriculum, which originally consisted of 17 90-minute sessions and two longer workshops, was developed with a vendor, a small company of three people, two of whom are psychologists and the third coming from an education background. They designed the program to meet 3M's goals: *get people to take responsibility, to handle change in the workplace, and to learn to be continually adaptive*. These goals are based on the behaviors in the Personal Leadership Model. The current 23 90-minute sessions are designed to help people exhibit these behaviors. Session titles include: "Are You Good Enough for the Dream Team," "Bambi vs. Godzilla: Dealing with Difficult People," "Conflict: Obstacle or Opportunity," "Listening: The Heart of Communication," and "Working for Yourself at 3M." The description of the "Dream Team" session is illustrative:

> Teams are pervasive in the workplace today—we often find ourselves on several at one time. The success of teams begins with each individual member and their understanding of their own contributions to team effectiveness. How strong is your team performance?
>
> Acquired Skills:
> – Learn the key dynamics of effective teamwork and apply them to the teams you serve with
> – Understand the benefits and challenges of diversity within workplace teams
> – Explore the true meaning of being a team player
> – Establish an action plan for enhancing your own team performance.

Two longer workshops, Eagles and Self-Managed Career, are designed to help people first understand themselves, particularly what they are passionate about, and prepare them to make contributions to the company. The central message is this: "You have control of yourself. You cannot wait for others." The entire personal leadership curriculum is a "living" and dynamic entity in that courses are constantly revisited and revised based on feedback from participants as well as particular areas of corporate emphasis. For example, in 1999, there is a major push toward the development of "resiliency," which is reflected in the current course offerings.

The Personal Leadership Curriculum has been offered for over two years now. The program is not free: each 90-minute session costs $35, Self-Managed Careers is $275, and Eagles is $250. Employees work it out with their coach/supervisor, and the appropriate department gets billed. Various measures attest to the breadth of implementation of the Personal Leadership Curriculum and its success. The original 17 90-minute sessions had 2,482 registrations from January 1, 1997, through March 31, 1998. Personal testimonials from attendees are overwhelmingly positive:

- I like the concept of being aware of each other's "gifts" so that we can understand and appreciate each other.

- This course offered me some good insights into myself and my conflict management style. There are some things about myself that I'm going to work on improving as a result of what I've learned. It's great to have

The following model is a representation of what good Personal Leadership looks like. It represents skills needed by all of us in today's work world. It is intended to be used both as a guide and as a self-assessment tool for on-going Personal Development.

Initiative

Definition: Preference for taking action; doing more than is required or expected; finding and creating new opportunities.

Example Behaviors:

- If I see something that I can do that needs to be done, I do it; I do not wait for others to tell me what needs to be done.
- When I do not understand an issue or task, I seek out people to ask questions of and I keep asking questions until I understand.
- I take responsibility for my personal development (behavior and skills), seeking out new opportunities from which to learn.

Emotional Self-Management

Definition: Mindfulness of my personal emotions and channeling them toward constructive outcomes.

Example Behaviors:

- I consider the feelings of others and treat others with dignity and respect.
- I assertively and respectfully ask for what I need from others.
- To improve my future performance, I continually assess my work and know that failure and resiliency are generally a part of the process for success.
- When decisions are made that I may not agree with, I realize that I have choices and I manage myself and my choices in a productive manner.

Cooperation

Definition: Working cooperatively with others, fostering teamwork, dealing with individuality within a group.

Example Behaviors:

- I value, honor, and rely on individuals in the workplace.
- I agree to disagree amicably.
- I participate willingly, support group decisions, and I do my share of the work.
- I keep people informed about the group processes in which I am involved and share all relevant and useful information.
- My positive attitude impacts the morale of everyone with whom I come in contact.

Customer Service Orientation

Definition: Focusing on discovering and meeting the needs of the customer or client; desire to assist others.

Example Behaviors:

- I realize that I am here to assist/meet my customer's needs, and do all that I can to do so in an efficient and effective manner.
- I continually put myself in the position of my customers, clients, coworkers, and leaders as a double check on my performance.

Figure 3. Personal Leadership Model

Self Confidence	**Definition:** Belief in personal capabilities and sense of self-worth, confidence in dealing with challenging circumstances, reaching decisions, and recovering and learning from failure. **Example Behaviors:** • I believe I can make a difference and act that way in performing my roles at work. • I "challenge the process" in a positive, contributing manner.
Achievement Orientation	**Definition:** Concern for working well, or aspiring toward a personal and/or group standard of excellence. **Example Behaviors:** • I work hard at whatever I do, setting a higher standard of performance for myself than others would set for me. • I follow through on my commitments. • I set goals for myself and work to achieve them.
Flexibility	**Definition:** Understanding and appreciating different and opposing perspectives on an issue; adapting to changing situations; accepting change in my organization or work requirements. **Example Behaviors:** • I keep an open mind and honor the thoughts and ideas of others, striving to understand their view prior to agreeing with them or presenting my view. • I accept that my way is not the only way. • I take personal responsibility for adapting to changes around me and continually work on my own ability to quickly adapt, realizing that change has become a way of life. • I work at understanding my department and division visions and aligning my efforts toward achieving them.
Interpersonal Understanding	**Definition:** Hearing and understanding the thoughts, feelings, and concerns of others, including those unspoken or partly expressed. **Example Behaviors:** • I am truly interested in and open to gaining perspective from the ideas and contribution of others. • I am mindful of the impact my words have on others.

Figure 3. Continued

courses like this that deal with 3M employees on a more "human" level and can help us grow both at work and in our personal lives.

- Thank you for allowing me to attend the Eagles class last week. I experienced and saw in others two specific results occur in the class: (1) a clearer understanding of overall purpose and (2) more clarity around how that purpose may be expressed even in the current job situation (regardless of whether the current job directly ties to that purpose or not). Please continue with your efforts to offer this class to the IT folks. Thanks again.

- Put me in the correct direction to start managing my own career more efficiently.

A more indirect but nonetheless critical measure is the single digit (3% to 6%) *turnover* that 3M IT enjoys. Although turnover could potentially increase as people exercise personal leadership in managing their careers, an increase beyond single digits has not occurred. IT management believes that its continued focus on building quality leadership which emphasizes the development and alignment of people has positioned IT to sustain single digit turnover.

A core strategy for *recruitment and retention* during the same time period as the Personal Leadership Initiative has been the hiring of college graduates and interns. The intern program has grown from single digit numbers in 1994 to more than 70 in 1998. There is an explicit objective to train employees, including interns, in personal leadership. Tanis Beadle, now retired, who shared responsibility for new college graduate hiring and the internship program, notes:

> Personal leadership applies to everybody at every level, including interns. Many interns attend personal leadership classes. In weekly get-togethers we share the tenets and examples of personal leadership and how to use these while still a student or a new 3M employee. Many past interns shared with me that they could have done more …they weren't sufficiently challenged. Now, we try to get the message across early in an intern's experience that it is THEIR responsibility, not their supervisor's, to assure that they are challenged, working to their full potential, and getting what they expect from their internship. If you find yourself twiddling your thumbs, do something about it! We've also addressed this with intern supervisors, coaching them on providing work objectives, leadership, and mentoring rather than narrowly focused expectations and task assignments.

The acceptance rate for full-time job offers in 1998 for those who had been interns was 100%. All rejections came from people who had not been interns. When 3M offered a voluntary separation package during the Imation spin-off in 1995, no one who took it had been an intern. It has become obvious that the internship program provides potential candidates valuable insight into how 3M works and what kinds of opportunities there are for personal contribution and career growth. Success with interns, as indicated by the fact that most interns who are offered full-time positions accept and stay, helps 3M buck the industry-wide hiring challenge. The Personal Leadership Initiative, at least indirectly, contributes to this success.

Other indirect indicators of success are requests for IT's expertise. For example, attendance in the 90-minute sessions and workshops above include non-IT people; IT attendance is probably between 30% to 50%. Other areas of the business were "beating on our doors" to take the classes. Lyla Campbell gives this assessment of the impact of the personal leadership initiative:

> Now the IT employees are in a better place than others in the rest of the company. It feels right. It's a different place. It's the way people should behave. HR, benefits, and other divisions see that what IT is doing in their leadership journey makes a difference. People from the IT leadership development group are being asked to be on corporate level HR teams, such as resiliency, careers, and change. The Leadership Development Center at corporate level is

> asking the same IT folks to participate in developing mandatory supervisory training. Other areas of the corporation are seeing what is happening in IT. They are beginning to come to us to talk about what is going on and to see how what we have to offer can be leveraged for the corporation.

Implementing personal leadership is not without challenges. Cathy Muckala, who is responsible for the Personal Leadership Curriculum and facilitator for the Self-Managed Careers and Eagles workshops, thinks it is going well but wishes it were going better. She would like to see the curriculum viewed as one that works for everybody, not just those without supervisory responsibility. (See Future Directions for the Leadership Initiative, where this concern is addressed.) Participants need more practical guidance, more overt guidance from their coach. Some do not have a good working relationship with their supervisor. She would like to see more of this relationship built. Better mentoring skills on the part of supervisors would provide an opportunity for long-term alignment of IT people and their interests with the needs of the business. Recognition of the importance of these mentoring skills is part of the discussion that occurs in the Positional Leadership Initiative, another essential component of the whole system of development activities that need to be integrated.

Transforming Nominal Leaders: The Positional Leadership Model

Whereas the Personal Leadership Curriculum is designed for IT professionals, the Positional Leadership Initiative is designed for those in IT management positions (Figure 4). Among the essential elements of leadership is a commitment to deliver *value to the marketplace* of IT's clients and 3M's customers. In addition, critical *leadership skills* include helping one's work group to develop a shared vision for delivering that value and aligning the needs and interests of the IT professionals in the work group to pursue the vision.

The leadership function is at the center of the model in Figure 4. The core idea in the Positional Leadership Model is to help IT people align (Labovitz and Rosansky 1997). Leadership competencies that help people achieve this alignment include helping IT people make the connections between themselves and their customer, strategy, work group (i.e., other performers), and process. These competencies involve helping develop commitment, vision, architecture, and alignment within the work group. A brief explanation of these four concepts follows; however, prior to this explanation, it is essential to have a more complete understanding of the shared leadership function. 3M IT has emphasized the message, "Leadership Is Everybody's Business" (e.g., see Kouzes and Posner 1987, 1995). In the center of Figure 4, the shared leadership function suggests that all personnel have various levels of leadership responsibility in the organization—first to lead self, then to lead in a situation or assignment as needed. Furthermore, most work groups will function best being guided by an appropriate mix of personnel assigned the directional and governing leadership responsibility for the work group. This group of people should collectively have the desire and competence to determine how best to serve their market and people.

Commitment: Given this understanding of leadership, the leadership (not just *the* leader) commits to serve some segment of the market (i.e., internal or external customers) and then determines the degree to which the work group will serve that market. Commitment entails striving for win-win relationships with the market, where both the customers and the members of the work group feel they will benefit. It also involves determining the depth of the market relationship: provider-user, partnership, or pervasive. This commitment decision is formed with the members of the work group and is understood by all within the work group.

Vision: The leadership provides a clear picture of the end-state for the work group. They form this picture with the help of selected work group members and people from their market. The vision does not provide all of the details of how to get to the end-state. Rather, it provides an image

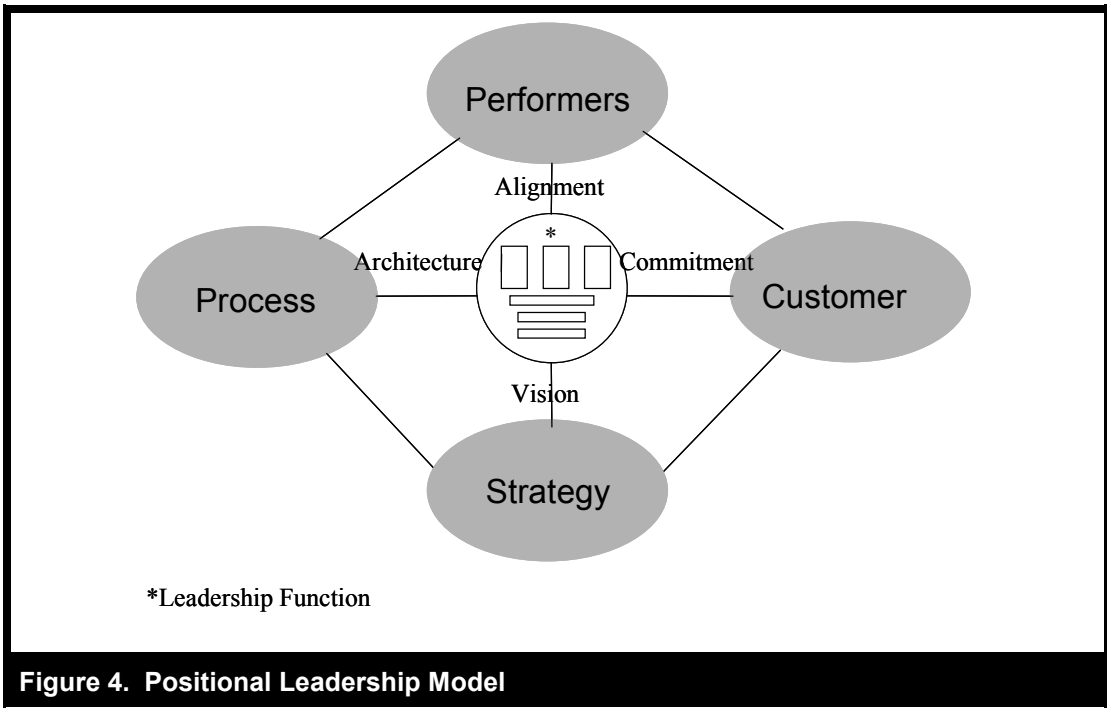

Figure 4. Positional Leadership Model

that, when viewed, will help align strategies that keep work on course. The vision specifies how the work group will be known by its market—in Labovitz and Rosansky's words, "The Main Thing," i.e., a theory of the business, value proposition, or "core idea," for which the group is known (e.g., Southwest Airlines' "uncompromising customer service" and Federal Express' "absolutely reliable express delivery"). As an example within 3M, the IT Application Development Group's vision is to become "A Premier Business Solution Provider," providing superior business solutions (not just the traditional IT solutions) for its clients. The clients, i.e., various 3M business groups, would then leverage these IT-based business solutions in support of serving 3M's customers. This vision will be achieved when IT Application's reputation for such solutions is well known throughout the company.

Architecture: The leadership determines what form of governance (the essence of the transition model) will best serve the work group and the market. Once decided, the leadership defines and deploys the appropriate organizational structure. For one work group it might be a traditional hierarchy, for another, self-directed work teams. The architecture includes the work processes internal to the work group and those that connect members of the group to others external to the group.

Alignment: The leadership has two primary alignment responsibilities. First, they ensure that all work group contributions are focused on the right things to do (a result of commitment, vision, and architecture). Second, they develop a clear understanding of the passion and competencies of every individual in their work group and then strive to align that passion and those competencies with the work group's contributions.

The positional leadership initiative began in the fall of 1996. To date, over 40 individuals in six groups have completed the journey. It is called a journey because it incorporates the notion of equifinality: it begins with a destination in mind but allows participants to determine different stops along the way. The program runs for a total of 12 weeks and meets four hours a week. A group of eight individuals, seven of whom represent a cross-section of IT and a member of the Operating

Committee, participate together. Excerpts from an invitation to an individual selected to participate by the IT Operating Committee provide some insight into the overall goals of the program:

> The learning experience is designed to challenge your thinking about leadership, and specifically leadership in IT. It's a strategic learning experience and not intended to solve specific problems.
>
> If you decide to participate, we are confident that you will have the opportunity to:
> - analyze your leadership paradigms in a non-threatening environment
> - identify areas where you can improve your own performance as well as the performance of your work group
> - build new relationships and a network of support with other members of IT
> - become a member of a growing group of positional leaders committed to making IT the best led division in 3M

Building understanding and acceptance of the transitions in manager-worker relationships via the Positional Leadership Initiative is the responsibility of Mike Marois and three others who collaborate on this initiative. Marois probably spends 50% of his time on this, while the others spend 20% to 40% of their time on it. While Marois has overall organizational responsibility, one person does systems and scenario planning while another focuses on personal behaviors, including mindfulness and knowing self and others, e.g., Myers-Briggs is used (Myers 1987). The third focuses on communication, team building skills, helping people grow, and servant leadership. They rely on academic and business leaders for their ideas. ("Some existing theories of leadership are valuable, but there is a need for new ideas as well. We think we are on the leading edge with some of our work.") They want to build *servant leaders* (Greenleaf 1991). At 3M IT that means encouraging leaders to serve their work groups: to be leaders that first care for their people, helping them become stronger, healthier, more autonomous, more self-reliant, and more competent; furthermore, it means balancing that caring with the needs of the company. Marois and his colleagues offer facilitation and the building of a network of colleagues who can learn from and support each other. The strategy for implementation is characterized as *guerilla warfare*: one convert at a time, one group, one leader at a time.

A participant in the latest Positional Leadership Initiative gives this assessment:

> First of all, thanks for inviting me to be a part of this. I know I wasn't on the radar screen otherwise, not being a part of CORP IT. So I appreciate it. I found the overall experience to be excellent. My hat is off to you and the team for being willing to not only SHARE, but to take some RISK and TRY some things, even if some of us might think it goofy
> - I REALLY LIKE the work your group is doing with the DIAMOND MODEL [Figure 4]...and would love to see even MORE DETAIL and thoughts fleshed out in this area. Same with the transitional model [Figure 2].
> - I liked how flexible you all were... especially when it came to us discussing items and going off on tangents. There was a lot of really good discussion and views others had I wanted to hear.

In the words of Mike Marois on the impact of the Positional Leadership Initiative:

> Providing this initiative is a learning experience. IT Communications, Consulting, and Professional Development is in the middle of the IT organization. We are trying to influence the organization from the middle out, as opposed to other leaders who were at the top of the organization and could control change from the top, e.g., De Pree [1987]. Sometimes it is like pushing on a rope, while at other times it is like hanging onto the tail of an alligator. It is premature to boast that it is a roaring success; instead, it is possible to say

> that there have been unbelievable, incredible transformations. Some people are doing really well, while some are not. I think it is making a difference. The proof will be in the customers who want IT's services.

Examples and anecdotes of the transformations engendered by the positional leadership program abound. One example of an incredible transformation concerns a manager who had been an "in-your-face command-and-control leader." Participation in the program resulted in his recognizing, and indeed embracing, the need for change in his management style. Another strong, yet introverted leader observed a colleague behaving inappropriately. Despite several messages from diverse individuals to ignore this behavior, the manager persisted in calling attention to the inappropriate behavior until the situation was resolved. It is evident that both these individuals benefitted extensively from the program in terms of addressing the weaknesses in their respective management styles and behaviors.

The underlying essence of the Positional Leadership Model and the Personal Leadership Model at 3M is consistent with recent literature which acknowledges that leadership abilities need not, and indeed, should not, be confined to nominal leaders. For instance, Manz and Sims (1991) introduced the concept of a "superleader." The superleader is described as one who can "lead others to lead themselves" (Manz and Sims 1991, p. 19). Arguing that competitive pressures and changing employment relationships have resulted in increased employee participation becoming a key organizational imperative, Manz and Sims note that a fresh perspective on leadership is necessary because of a lack of knowledge about how to manage appropriately under these altered business conditions. They suggest that through a display of appropriate behaviors, the superleader is capable of eliciting commitment and increased ownership of work from followers (Manz and Sims 1991; Sims and Manz 1996). In essence, then, the superleader is capable of creating an environment where self-leaders dominate and where each individual employee is encouraged to exercise initiative and willing to take responsibility.

Future Directions for the Leadership Initiative

As noted earlier, everyone at 3M is responsible for leadership. The Shared Leadership Architecture (Figure 5 and the central core of Figure 4) recognizes that the leadership function is distributed across everyone and is the guiding direction of 3M's holistic, evolving set of development efforts. This leadership architecture, which also continues to evolve, shows the building blocks of leadership, beginning first with the leading of self and progressing to the leading of others. Some performers have leadership responsibilities that are broader in scope or more consuming, but all must share appropriate leadership responsibility.

A suite of services for leadership transformation is envisioned for the future. Two deployment strategies are used for the services that support the architecture. First, more structured learning experiences relevant to each of the six boxed areas of leadership identified in Figure 5 are offered. For example, courses in the Personal Leadership Curriculum address the two areas of leadership identified in the two bars that go across the bottom of Figure 5. The three bars that go all the way across apply to everyone. Every individual in IT will be served by the Personal Leadership Curriculum, including Eagles and Self-Managed Careers. The elements at the top of Figure 5 are for those who spend more time on leadership. Positional Leadership in this model is not just focused on the organization (as it has been in previous 12-week offerings that have focused more on the leftmost of the top three boxes at the top of Figure 5), but also on project and knowledge leadership. For example, 3M has had a lot of focus on project management in the past and offers considerable training in this area that needs to be coordinated with the Positional Leadership Initiative, as shown in the middle of the top three boxes in Figure 5. The second deployment strategy is less structured, involving more of a consulting service. The idea of *one-on-one consulting for leadership* fits here. For example, after determining the specific development needs of groups, facilitation/learning sessions are tailored to address those specific needs, e.g., assigning a mentor would be included here.

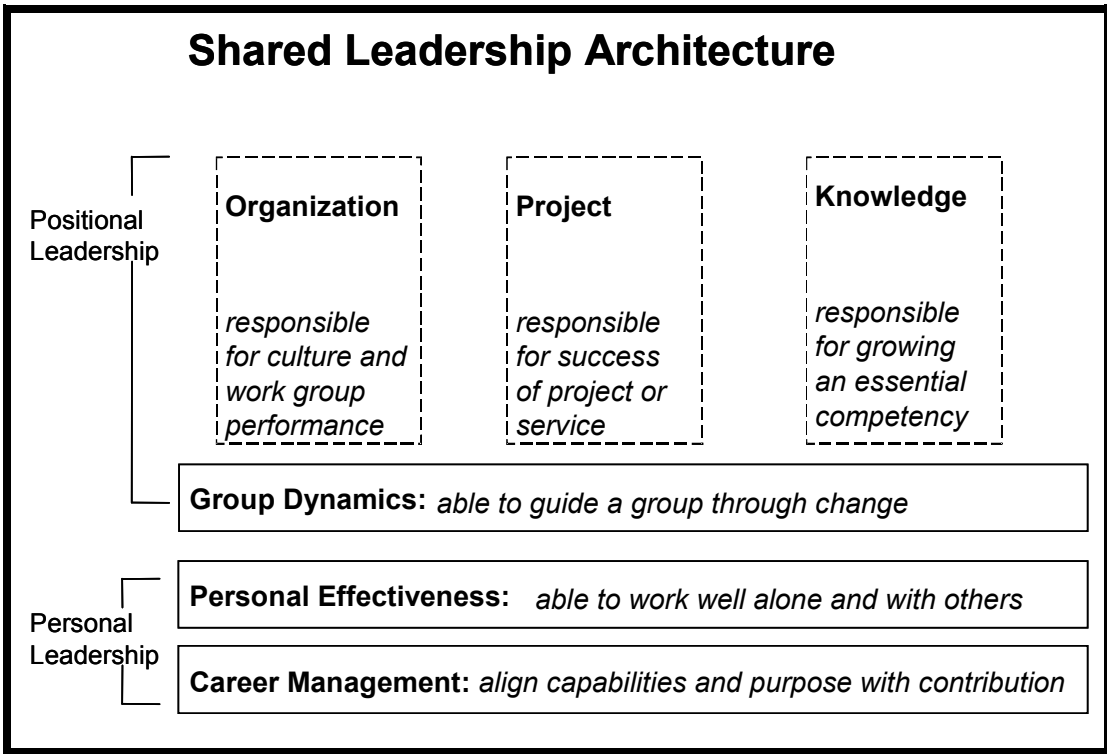

Figure 5. Shared Leaadership Architecture

The suite of services described here has not necessarily been coordinated in the past, but the elements are now envisioned as fitting together. The core idea is to provide transforming learning experiences to foster the distribution of leadership within IT in order to build a more adaptive, aligned, and responsive organization.

A final leadership service that has been offered in the past and will continue is *executive education*. The purpose of executive education is to increase the knowledge of technology at 3M to enable executives throughout 3M to take part in the use of technologies. It is indicative of the importance of IT's partner divisions understanding and accepting technology and a key component in realizing Dave Drew's vision of IT as a strategic partner. The program has been mainly information sessions that talk about the technologies or initiatives in IT to support 3M strategies. More interactive, hands-on training sessions (e.g., related to a new executive website) are planned for the future along with continued offering of one-on-one training sessions on PC skills.

Overall Assessment of the Leadership Initiative

As reflected in the descriptions above, the leadership initiative at 3M IT is rich in detail and not based on a checklist mentality but rather a deeper perceived need to build community and pervasive business relationships. The positive evaluations of the impact of the Personal and Positional Leadership Initiatives presented above are based on the assessments of 3M employees. Benchmarking 3M against other companies that have demonstrated success in business or IT performance corroborates the relative strength of the leadership initiative (see Figure 6, where several companies are on *Fortune*'s Most Admired Corporations list or *Computerworld*'s Best Places to Work list). The results show that 3M's IT people recognize that the human resource vision is to provide personal development, particularly for leadership more so than technical skills, and to develop a sense of community. These are critical elements of the leadership initiative and are rela-

Company	N	Personal Development Essential (%)	Importance of Developing Technical Skills > Leadership Skills (%)	Sense of Community Important (%)	Training and Development for Business and Leadership Skills	Sense of Com-munity	Stability and Security
3M	16	56	31	81	3.6	3.9	4.0
InsCo	17	47	35	82	4.0	3.8	4.1
InfCo	13	46	38	62	2.8	3.6	3.6
SoftCo	15	40	67	53	2.9	3.4	3.9
BanCo2	15	33	33	67	2.8	4.0	4.5
TransCo	14	21	57	14	3.1	2.8	3.4
CompCo	11	18	73	36	2.9	3.3	2.6
BanCo1	9	00	56	11	2.7	3.0	3.0
Total/Avg	110	35	47	55	3.1	3.5	3.7

In a study of human resource practices at companies identified as successful in managing human resources or successful in using information technology, small groups of managers and IT professionals selected by the organization answered questions related to human resource practices. One of the questions asked participants to review 15 items and check seven that most strongly describe their organization's human resource vision or practices. Items corresponding to columns 3 through 5 are as follows:

- Personal development is essential, even if it does not involve skills for the near term.
- Greater emphasis is placed on the development of technical skills over leadership skills.
- Developing a sense of community is a major concern.

Values in columns 3 through 5 represent the percentage of organizational participants checking these items.

Another set of questions asked participants to rate on a five-point scale the extent to which each of 11 human resource practices made them want to leave (1) or stay (5). The items corresponding to columns 6 through 8 are as follows:

- Training and development opportunities that focus on business and leadership skills
- Sense of community
- Organizational stability and employment security

Values in columns 6 through 8 represent mean responses of participants.

Figure 6. Comparative Evaluation of 3M with Other Companies

tive strengths at 3M compared to other companies. Similarly, various human resource practices that are part of the leadership initiative, particularly training and development for business and leadership skills and a sense of community, are rated as relatively attractive at 3M. Finally, one of the key elements of the 3M culture, secure employment, is rated relatively high at 3M.

Impact of the Leadership Initiative on Transforming IT to a Strategic Partner

Many factors could affect transforming IT to a strategic partner at 3M, of which the leadership initiative is but one potential factor. (See Table 1 to review other factors discussed above.) The belief of many at 3M is that *people* are critical to this transformation and the leadership initiative has been an important contributor. Is the transformation complete? Do customers want IT's services, as Mike Marois suggests the proof of a successful transformation will be? John Lemanski, recently retired as Manager of IT Planning with 33 years of experience at 3M, provides this evaluation:

> We are still on the executive learning curve. Historically, IT ran payroll, processed orders as an addendum to the business, and provided supplemental support to fundamental business processes. When people started looking at business processes and recognized that technology could help do business in new ways, they started to integrate it into the business processes rather than having it serve as an addendum. Executives began to see the pervasiveness of IT across business functions. They began to recognize how IT could be an essential competence. It fundamentally changes the interface with the customer. It provides an opportunity to look at entire new ways of doing finance, human resources, sales, marketing, etc. Previously, IT had a much smaller impact. As executives get exposed, they recognize its power and pervasiveness.

Dave Drew's boss, George Meredith, leads the Business Process and Information Systems Steering Committee. This group of high level executives (George is a tier below the CEO) meets every other month to review, approve, and establish policies and priorities for IT and business process reengineering activities across the corporation. It includes group VPs and the head of Finance. Over the last three years this group, which is very vocal in linking attainment of business objectives to IT contributions, has demonstrated a much greater respect for the contributions IT is making. There is a real confidence in Dave's ability to run the organization and in having him use his judgment regarding how IT can help in attaining those business objectives, e.g., how the IT infrastructure should be designed and implemented. He is given a lot more latitude. The committee is not second guessing him and getting into the bowels of IT. Budgetary limits for IT are set (e.g., as a percentage of sales) that Dave has to live within, but he is given latitude in how to spend the budget. Of course, the committee is an approving source for major projects, but very seldom are projects that Dave has worked on not approved. When Dave has come for major expenditure approvals or organizational realignment, the committee has been very receptive. Members believe that Dave is delivering the goods. One of the signs of this is the elevation of Dave to group VP and placement on 3M's operating/executive committee. Another sign is the way the committee operates. Four or five years ago, IT was viewed in a much less favorable light. IT was not business focused and was not delivering solutions in a timely manner. It was late, over budget, and not communicating requirements. The committee kept a close rein on IT. One heard a lot of negative comments. Now there is respect for the IT organization and its contributions.

Others within 3M supplement as well as reinforce this perspective. To illustrate, some IT professionals supplement the idea that 3M is still on the learning curve by suggesting that different views of IT exist at the plants and at corporate. At the plant level, there is a sense that IT is perceived as "support" and that engineering is the main function of 3M. Plants view corporate IT as trying to enforce standards upon them. IT staff are not regarded as extremely important to the business there. As another illustration, others reinforce the idea of IT becoming an essential competence by noting that, in the past, IT was an essential support function for the business, but as one person stated, it is now becoming an "absolutely integral part of the business." Furthermore, as noted by another, the current CIO has done an "outstanding job" of building credibility with the top management team.

An example of a customer who wants IT's services, thereby providing evidence of a successful transformation, is Chuck Harstad, Staff Vice President, Corporate Marketing. He notes that IT is "a tremendous enabler of business productivity and efficiency." He views IT as "a key business partner helping us enhance our customer interface, achieve our business goals, and enhance our productivity." Achieving this status has resulted, Harstad notes, from a transformation where IT "has come from the back room to the front room of business at 3M." He indicates that one of the key elements enabling IT to provide leadership in developing applications that solve business needs is "the development of its people."

Barriers to Success

Not all has gone smoothly on this journey toward becoming a strategic partner. The antennae of IT people have been raised on the issue of leadership. When a leader is recognized or promoted who still exhibits the older "command and control" style of leadership, IT management sends mixed signals that confuse the IT people. Reward and recognition systems have yet to be aligned with the newer management style represented in the Transition Model of Figure 2. The evaluation system is not yet completely aligned to leadership expectations. From the perspective of those managing this transformation process, not all the desired system changes can be made at once. There is not enough time and energy to do everything one would like to do to have a smooth journey. Thus, inevitably it is necessary to suffer through "change pains" while taking the journey.

The current mix of the IT workforce at 3M creates another set of challenges. As noted earlier, 3M IT utilizes contractors to address temporary increases in business needs that cannot be met through current staffing, or for certain technologies where the internal skill base is inadequate. Contractors typically do not undergo the type of leadership development offered to internal staff. Yet, they work closely with internal staff and, for the most part, are integrated into the fabric and work process of the IT organization. Although there is recognition that, over time, the staff/contractor ratio has to increase significantly, there is nevertheless concern that at the present time, there are clearly imbalances in the extent of leadership development to which different members of the same project team might have been exposed.

The success of the Personal Leadership Curriculum as a key contributor to the transformation of a large number of IT people at 3M has not only raised the antennae of IT people on the issue of leadership, it has also raised expectations about appropriate leadership behaviors. This raising of expectations has not been matched at the same time with appropriate changes in all leaders' behaviors. The Positional Leadership Initiative has focused on only a few nominal leaders at a time. Many IT leaders have yet to be affected. There is criticism that the entire leadership initiative and its elements take too long and consume too many resources. One indicator of the mismatch between expectations and actual leader behavior comes from additional data collected from the eight companies mentioned in Figure 6. Besides the items mentioned in Figure 6, another item measured was quality of leadership. 3M had relatively low scores for quality of leadership. Specifically, 3M ranked seventh out of the eight companies with a score of 3.4 vs. a mean of 3.6 for all eight companies; on a 1 to 5 scale the lowest of the eight had 2.9, and

the highest had 4.1. Given the focus on leadership development at 3M, these results were surprising. One interpretation, consistent with a failure to meet raised expectations, is that 3M's IT professionals who are not in nominal leadership positions expect more of nominal leaders, but not enough nominal leaders have been transformed by the leadership initiative to meet these raised expectations. This mismatch between expectations and actual leader behavior also contributes to a rough journey.

Nevertheless, 3M's IT managers are committed to "staying the course" in the face of the dissatisfaction and complaints that are bound to arise when reality falls short of expectations. Recognizing the difficulty of the journey is a major element in overcoming the barriers to a successful transformation that arise from mixed signals and unmet expectations. Having the courage to remain committed to the journey in the face of this difficulty is another major element. In the minds of those responsible for the process, accepting that the journey will take time is half the battle.

Lessons from 3M's Innovative Experience

The ability to develop IT professionals who can flourish in the midst of constant change by acting as entrepreneurial leaders will be a critical capability for IT organizations of the future (Ross et al. 1996). We documented the arduous, sometimes difficult journey that has nonetheless been successfully undertaken at 3M IT to bring about such a fundamental change in its workforce. Some unique elements of this journey are worth underscoring again: the notion of a *human resource* rather than a technical solution to alignment; the *all encompassing focus* of the leadership initiative to include not just nominal IT leaders but all IT professionals; and the existence of multiple, integrated initiatives that constitute a coherent set of activities rather than a single program. These elements, the challenges 3M has encountered during the journey, and the lessons learned should prove useful to other IT leaders as they try to recruit, develop, and retain IT human resources as an essential competence for successfully competing in the 21st century. Although we believe that simple imitation of 3M's programs may not necessarily produce desired results in another organizational context, four general principles applicable to others are summarized below. These principles are offered as guidelines rather than strict prescriptions.

- *The alignment of individual needs and values with organizational goals is an essential component of recruitment and retention success.* While it is true that management thinkers have long emphasized the notion of alignment, discussions of strategic alignment for the IT function (e.g., Rockart et al. 1996) typically do not focus on human resource challenges. In today's corporate environment where the psychological contract between employer and employee, particularly for the highly-sought-after IT professional, is increasingly becoming transactional rather than relational in nature (Byron 1995), the development of organizational *commitment* among the workforce is challenging, yet essential. Without active efforts to develop commitment, the movement from the left-hand to the right-hand side of the Transition Model (Figure 2) will be stunted by the forces that push toward transactional contracts. 3M IT works to achieve commitment in this challenging environment via alignment, i.e., through explicit attention to individual needs, goals, and values in its human resource practices, and by developing an environment that places value on people and their competencies (through the Personal Leadership model). Focusing on achieving this alignment in some planned manner is essential.

- *It is imperative that a vision for the IT human resource be articulated and communicated.* The description of 3M's vision identifies essential human resource transitions and personal behaviors required to make the transformation from traditional back-office support to business partner. Our experiences with diverse companies suggest that IT leaders in the past have perhaps expended disproportionate effort on developing technical competencies at the expense of a

cogently articulated and communicated human resource vision. In the 21st century, arguably such a vision could be a major source of competitive advantage for any IT organization. 3M chose to focus primarily on leadership, others might seek alternative foci for guiding human resource activities. Whatever the specific focus, articulation and communication of such a vision facilitates at least three significant outcomes: (1) an organizational transformation, by helping build understanding and acceptance of desired changes, (2) greater success with recruitment and retention of IT professionals, by serving as a guiding vision for communicating with potential recruits and a focal point for the design of specific human resource practices, and (3) explicit guidance for the construction of learning and development materials.

- *Successful initiatives for transforming the IT workforce involve systemic, multiple, pervasive efforts to implement change in both IT managers and IT professionals through brief, focused, persistent activities over time.* The Personal and Positional Leadership Models, their associated curricula, and the evolving Shared Leadership Architecture, along with the college intern recruiting program and a new hire integration and orientation program, offer insights into how to design and implement such initiatives. The systemic thinking and holistic view that accompany these initiatives have led to consideration of many factors and the design of complementary activities that are not just single interventions or unrelated events; rather, they form a holistic set of interrelated, change-oriented activities that facilitate real transformations over an extended period of time. At 3M, these multiple, pervasive efforts have helped bring a human resource vision to reality, not only within the context of helping transform the IT organization, but also within an extremely competitive labor market.

  As noted in the earlier section on "The Genesis of the Leadership Initiative," a large number of IT people went through a one-time leadership program. Some went through it "kicking and screaming" with a cynical view of "yet another program." In effect, this lesson and the preceding one represent tactics that were developed in response to the relatively ineffectual initial efforts focused on leadership development.

- *Transforming people in IT takes a multi-year commitment.* Cultural change is not for the impatient or timid since the journey is both slow and arduous. Although 3M IT does not see its journey as complete, its experience and lessons even at this stage of its multi-year journey provide valuable insights for successfully recruiting, developing, and retaining productive IT professionals who are essential for an IT organization to be a strategic business partner.

Implications for Theory and Research

This case study has examined a complex set of social activities undertaken by 3M IT to develop a leadership capability in its people. Several implications for theory and research follow. In particular, three noteworthy avenues along which fruitful future research might be conducted include the relationship between the concepts presented here and the resource-based view of the firm, the notion of dynamic capabilities, and alternative methods of seeking alignment between IT and the business.

In a persuasive theoretical analysis, Mata et al. (1995) identify managerial IT skills (which have similarities to leadership capability) as a source of sustainable competitive advantage. In their study, managerial IT skills included

> (1) the ability of IT managers to understand and appreciate the business needs of other functional managers, suppliers, and customers; (2) the ability to work with these functional managers, suppliers, and customers to develop appropriate IT applications; (3) the ability to coordinate IT activities in ways that support other functional managers,

suppliers, and customers; and (4) the ability to anticipate the future IT needs of functional managers, suppliers, and customers.

These researchers compellingly dismiss four other IT resources extant in the IT literature, including technical IT skills and proprietary technology, as sources of sustainable competitive advantage. They invite others to identify resources or capabilities other than managerial IT skills that could provide sustainable competitive advantage. The leadership capability as developed at 3M IT, since it is not the same as managerial IT skills even though it has similarities, is such a candidate.

In the resource-based model of competitive advantage used by Mata et al., a resource provides sustainable competitive advantage if it does three things: it must provide value, it must be heterogeneously distributed across organizations, and it must be imperfectly mobile. This case study has attested to the value of the leadership capability. The innovative character of the leadership initiative and the lack of such initiatives in other organizations we have studied provide evidence of the heterogeneous distribution of this capability across organizations. One can question the imperfect mobility of this resource by noting that the case study has provided a written description of the leadership initiative, including codification of the Transition Model (Figure 2), the Personal Leadership Model (Figure 3), and Positional Leadership Model (Figure 4). Furthermore, lessons have been identified to provide guidance to others desiring to transfer this capability to their organizations. Nevertheless, the history (*multi-year* journey), causal ambiguity (*systemic, multiple, pervasive efforts*), and social complexity (including *alignment of individual needs and values with organizational goals* throughout the Personal Leadership Curriculum as well as by positional leaders and *guerilla warfare* of the Positional Leadership Initiative) suggest that the leadership capability at 3M IT is an imperfectly mobile resource.

Mata et al. conclude that the search for IT-based sources of sustained competitive advantage must focus less on IT, *per se*, and more on the process of organizing and managing IT within a firm. They call for future research to explore, in much more detail, the exact nature of managerial IT skills, how they develop and evolve in a firm, and how they can be used to leverage a firm's technical IT skills to create sustained competitive advantage. Although this case study has not focused on the same managerial IT skills described by Mata et al., it has provided a rich description of how leadership capability is being developed in IT professionals and nominal leaders at 3M IT. Furthermore, the success of the leadership initiative reinforces the conclusion that the search for IT-based sources of sustained competitive advantage should focus less on IT, *per se;* besides managerial IT skills, the search should focus more on developing human resources to have the kind of leadership capability described herein.

In a related theoretical analysis of sources of competitive advantage Teece et al. (1997) describe the notion of dynamic capabilities. Arguing that their perspective, although clearly related, is distinct from the resource-based view, they define dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (p. 516). Thus, dynamic capabilities represent a higher-order ability to create new forms of competitive advantage through an exploitation of existing competencies. Applying this perspective to 3M's efforts suggests that the leadership programs may well represent a dynamic capability, and thereby permit an organization to develop other capabilities that are so crucial to continued success in using IT in support of business needs: partnering, entrepreneurship, customer-orientation, and strategic thinking. The precise way in which a pervasive IT leadership capability might be used as a platform for nurturing other essential competencies is an area that merits further research.

Finally, it is important to underscore again the unique nature of 3M's approach to alignment. Prior work (e.g., Brown and Magill 1994) has emphasized structural approaches to alignment that involve the definition of alternative structures and governance and coordination mechanisms. For instance, federal and hybrid forms of IT

governance have been proposed as a vehicle for facilitating needed coordination between IT and the business. In contrast, at 3M the focus has been on a human resource approach to achieving such alignment, on the assumption that individual attitudes, behaviors, and skills are a more enduring basis for alignment rather than any architectural configuration of reporting relationships. It would be useful for future research to further examine the relative efficacy of human resource and leadership capabilities on the one hand and structural approaches on the other as alternative means of aligning the IT function with the business.

Conclusion

This case study of 3M IT's leadership initiative has identified leadership capability in all IT professionals as a source of sustainable competitive advantage. The elements of 3M IT's leadership initiative suggest an approach for developing a leadership capability, but the time required to develop this capability and the complexity of the social processes required to develop it make it a challenge to duplicate. Nevertheless, IT managers desirous of aligning IT resources with the organizational strategy may well find value in seeking to develop a leadership capability similar to that described here. The elements for developing such a leadership capability as identified in this case study include:

- A transition model that describes the way IT managers and IT professionals should interrelate in the future, which in 3M IT's case included moving from hierarchical command-and-control to more of a collaborative philosophy

- A personal leadership model—which includes eight model behaviors of initiative, emotional self-management, cooperation, customer service orientation, self-confidence, achievement orientation, flexibility, and interpersonal understanding—and a curriculum of several, relatively short courses designed to get IT professionals to take responsibility, to handle change in the workplace, and to learn to be continually adaptive through these eight model behaviors, while aligning individual needs and values with organizational goals

- A model and curriculum for those in positions of nominal leadership, focusing on helping IT professionals achieve alignment, e.g., with their customers and within their work group

- A shared leadership architecture that incorporates the previous elements in a broader model of leadership development services envisioned for the future.

The findings from this case study indicate that investment in a leadership capability can help align IT with the business vision and provide value to IT customers. Indeed, theoretical analysis using the resource-based model of competitive advantage with the results from this 3M IT case study suggests that a leadership capability in all IT professionals is a potential source of sustainable competitive advantage. However, such a resource or capability by its very nature is not easily duplicated. Those convinced that development of a human resource capability is a sustainable source of competitive advantage should benefit from this description and analysis of 3M IT's journey.

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