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Implementing Change in a Public Agency:

Applying a Process to Produce Change in VDOT

TR-07-07

A report presented to the Virginia Department of Transportation and
the VDOT-VT Partnership for Project Scheduling Advisory Board

October 2007

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Abstract

Change stands as both a threat and an opportunity that every organization faces. In response to the requirement to either confront and implement change or cease to exist, an organization must develop a systematic model to address change that effectively incorporates the change into the company. Public agencies such as the Virginia Department of Transportation (VDOT) must likewise address these issues. A model is proposed for change that describes a process for implementing change in an organization. The critical steps to change include identifying the reason for change (the 'why' and the 'what' of change), following a prescribed process for change (the 'who' and the 'how' of change), and overcoming the challenges to change (the barriers to change). This model is then applied to a specific situation confronting VDOT as an exemplar of how a public agency may successfully navigate through a change situation.

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Introduction

Change ranks as one of most daunting, yet necessary, processes that any organization faces. Change creates uncertainty and the unknown, a break from the status quo that generates the fear of failure; yet without change, failure is certain (Barker, 1986). Leaders in every industry, regardless of discipline, seek methods to successfully implement change in their organizations. Public agencies are no exception, though implementing change produces unique challenges in such an organization. Nevertheless, the goal of any change initiative is to successfully implement a plan to produce some set of desired results that shift the current status quo, and to sustain the initiated change over time. Achieving this goal requires understanding the reasons to pursue change (why change is necessary and what to change), the process for change (how to pursue it and who will act as the agent of change), and the challenges to change (the observable and subtle barriers to change). The proposed change model is applicable in numerous settings. This work, however, focuses specifically on employing the change process within a public agency, the Virginia Department of Transportation (VDOT). Therefore, after discussing the change process, the proposed model is applied to a particular change effort in VDOT.

Reasons for Change

The nature of both humans and organizations is to resist change; as a result, change is almost always a difficult task. Therefore, the first step in approaching change is to explore the reasons for pursuing change. After identifying why change is necessary, the organization must select the structure or processes that ought to change.

Why Change?

Simply put, change must occur because all environments change over time, and any living organism, be it biological or organizational, must adapt in order to survive. The degree to which adaptation occurs in concert with - and in the most successful cases, in anticipation of - the changing environment, the more an organism will thrive relative to others also seeking to survive and competing for the same scarce resources (Heifetz, 1994). Whereas organizations exist in dynamic environments, they must exhibit this ability to adapt internally in response to external changes. These external changes affect the various domains the organization exists in, including changes in: industry characteristics, raw materials, human and financial resources, market and consumer demand, technology advancements, economic conditions, globalization, governmental regulations, and change in the larger social culture (Bonham, 2006). Fluctuations in these variables demand a parallel modification by the organization.

These fluctuating variables, and how the organization is structured to operate in the midst of these variables, create a framework called a paradigm that people within the organization adopt to

understand the environment. The paradigm defines the norm, the steady-state, and the status quo for all participants in the organization, and provides a mental model to filter and then use all of the data created by the environment (Markham, 2007). Paradigms define how people expect to observe the world around them. As long as the environment around and in the organization fits the expectations set by the paradigm or can be handled by the processes of that paradigm, then no significant change appears necessary. However, when the environment changes drastically, a shift in the paradigm is required, and change must occur.

Two dangers arise relating to the paradigm. First, the current environment for most organizations changes at an ever increasing rate, challenging the bounds that existing paradigms can handle. When reality does not fit the paradigm framework, individuals often modify reality to fit the framework rather than vice versa. Second, a phenomenon labeled the 'paradigm effect' occurs when individuals in the organization are so familiar with certain patterns and environmental characteristics that they literally cannot see when a shift in the paradigm occurs and a subsequent major change is required (Barker, 1986). Organizations must constantly scan the boundaries of the paradigm (the "edges of normal"), and prepare to change as 'normal' no longer remains adequate.

What to Change

This 'boundary scanning' detects a changing environment and signals the need for change and leads to the second question to ask in exploring the reasons for change: 'what must change?' The important corollary to this question is 'what should not change?' Successful organizations have clear plans for handling uncertainty, as well as equally solid commitments to what will never change. James Collins and Jerry Porras (1996) contend in their Harvard Business Review article, "Building Your Company's Vision," that the answer to the 'what must change' question lies in a clear articulation of the organization's vision. This vision should guide the organization in answering all questions about what to change. According to Collins and Porras, the company's vision consists of two components, the core ideology and the envisioned future. The core ideology of the firm is the purpose and values that the company will not change over time because it represents the organization's reason for existence. Without this core ideology, the company would have no direction or reason for being. It unites the organization and defines clearly what it stands for. This existence statement will guide and arbitrate all future decisions. Organizations without a clear reason for existence have no overarching cause to define itself by, and therefore are without a compass in considering change. Once the core ideology is clear, anything that is not directly part of that vision is open to change.

The second part of the vision is the 'envisioned future', which Collins and Porras (1996) say involves an 'audacious' goal. This goal will require ten to thirty years to accomplish, and includes a detailed description of what the organization will look like when the goal is achieved. The envisioned future is the means by which the core ideology is pursued in the marketplace. The most valuable vision goals are extremely difficult to achieve, yet are attractive enough to stimulate long-term pursuit. They

motivate the organization to use its strengths to create the future, rather than simply continuing to do what it has done in the past. In short, these goals expand the boundaries of the paradigm to redefine what is possible and how much the organization plans to achieve. These goals must continually grow and change as the environment changes and new possibilities arise, evolving as the company develops.

The organization implements change, therefore, in the pursuit of the envisioned future. As that vision results in selecting between opportunities for change, each decision is based on values. Whether cognitively realized or not, leaders reveal value decisions in every change discussion (Heifetz, 1994). Change decisions are revealed in what the organization will pursue effectively. By making any given choice, the organization values one outcome above another, choosing between competing values. Each choice produces different levels of benefits for various stakeholders (the employees, the community, the customer/client, society as a whole). The company's core values will determine how the 'greatest good' is determined and assigned to the stakeholders. Decisions to change must pass the values test prior to implementation (Heifetz, 1994).

On a smaller scale, individual change actions must add value to the organization, helping the company to become more effective and/or efficient in some manner. In the frenzy to keep up with the environment, change can occur as a mindless act without justification. Two models are proposed to evaluate what to change. The first is the Needs-Harms Case, which discerns needed change versus wanton change by determining if the harm that results from no action affects the livelihood of the organization. If a direct link is shown between the suggested need and the existing or anticipated harm and the harm is resolved by meeting the need, then the change is warranted. The second model is the Comparative Advantage Case, which argues that a particular change management plan will produce results that improve the current status quo significantly (Freely, 1990). The organization is compelled to take advantage of the opportunity. This model forecasts how the future state will improve based on the proposed change, and is used to define what aspects should change (Cummings and Worley, 2005). By using a long term, vision-casting approach to defining purpose along with a short-term, value-adding basis for making decisions, the organization can decide what change to pursue and what to forego.

The Process of Change

After determining that adequate reasons for change exist and identifying what to change, the organization must next develop a process for achieving change. This process includes selecting the individual or team that will lead the change process, as well as defining a model for how to pursue change. Only after the process is fully planned can the organization implement the change.

The Agent of Change

The first task in setting a process for enacting change is to select an agent of change to guide the effort. This change agent is distinct from the change champion from executive management, who is usually the project sponsor. The character qualities of the change agent will affect the success of the change initiative. Though no set of characteristics can guarantee success or predetermine failure, the

change agent should possess several key traits and abilities. Available literature provides a myriad of change management qualities; this work covers only those characteristics seen as most essential, particularly in regards to enacting change in a public agency.

The defining characteristic of the change agent is that of leadership (Kotter, 2001). The successful change agent must not fear the unknown; rather, as a true leader, he must accept and even thrive in situations of risk and uncertainty, understanding that chaos and lack of structure is part of the change process and refusing to 'impose order' on a dynamic system before all necessary change occurs. In fact, the true leader guides his team away from the status quo, changing perceptions of the followers about what is possible and desirable (Zaleznik, 1977). Truly, leadership is all about preparing for and leading others through change, setting direction, aligning people in the organization, and motivating and inspiring. These characteristics are relatively rare in leaders, and are highly desirable (Kotter, 2001).

The successful leader must focus on the positive aspects of change. The leader must use this time of change to re-emphasize who the company is and what it stands for, and to reinforce the vision and values that may have shifted over the years (Pritchett & Pound, 1988). A danger in change is an unintended culture shift; the leader must use the change opportunity to improve sub-par aspects of the culture while maintaining the desirable ones. The best leaders are skilled in building commitment within the organization. Commitment is built through personal passion and dedication to the change (self-management and attitude adjustment), development of a strong sense of purpose, delegating power (and control), valuing the individual employee, building momentum, and rewarding/honoring results. The leader must fulfill the employees' needs to ***belong*** to the organization, generating cohesiveness (Pritchett, 1994).

A second key characteristic of the change agent is a strong values base. Truly, leadership cannot exist independent of a value system that will motivate leadership direction (Heifetz, 1994). Therefore, leadership ability in the change agent is complemented by solid, unwavering values that protect against leading in the wrong direction. The agent must define the purpose of his leadership. On one hand, leadership may have as its goal the more self-centered view of personal success, reward, accomplishment and short-term gain. On the other, the predominant values may focus on the long term betterment of society, the elevation of the followers to the highest possible level and/or the use of influence to help all parties reach their individual and corporate goals (Liker, 2004; Fickett et al, 1997; Heifetz, 1994). The successful change agent will exhibit far more focus on the latter than the former. From this value-base, the agent seeks to view the change decision from the stakeholder's context, and pursues the greatest benefit to all parties. As a result, the change agent focuses the organization's true needs, and not simply its felt or perceived needs. While felt needs appear critical based on perceptions and established paradigms, true needs are the ones that actually affect the livelihood of the organization (Markham, 2007). Furthermore, the value of seeking everyone's collective best interests through consistently operating in an honest, forthright manner enhances the followers' view of the agent as a

leader, increasing his credibility and improving his ability to facilitate change (Fickett et al, 1997). Given the nature of public leaders as stewards of the people's resources, unswerving values are essential.

A final crucial characteristic for the change agent is the ability to vary style according to the present situation. Daniel Goleman (2000) suggests that there are six leadership styles, of which the leader will use at least four depending on the situation: coercive (demanding immediate action), authoritative (using a vision to mobilize), affiliative (developing relationships and creating harmony), democratic (reaching consensus), pacesetting (setting challenging goals), and coaching (mentoring and developing followers). These leadership styles correlate to what Goleman (1998) calls emotional intelligence, which is a person's ability to understand his own emotional composition, as well as that of other people. Emotional Intelligence includes components of self awareness, self regulation, motivation, empathy, and social skill. Different emotional intelligence capabilities drive each of the leadership styles, and have a direct effect on the working climate of the organization. As the company's climate is positively affected, performance improves. Climate factors are noted as flexibility, responsibility, standards, rewards, clarity and commitment (Goleman, 2000).

Of the six leadership styles, the authoritative style produces the best working climate by mobilizing the people towards a vision. This style was shown as the most effective during times of change, when vision and direction are needed (Goleman, 2000). Given the stressfulness of the change on the organization, the leader should also skillfully employ the affiliative style, which utilizes empathy and relationship building; this style helps rebuild broken trust, and focuses on people first. Finally, because of an experience gap in the workforce, the leader must successfully coach his employees, empowering them and allowing them to develop into leaders with improved performance. Times of quick change may also require a coercive style (Goleman, 2000).

Next, the leader must constantly grow in the way he interprets his surroundings and reacts to challenges and changes. "The Seven Transformations of Leadership" identifies seven 'action logics', or leadership styles, to describe leaders and their approach to change (Rooke and Torbert, 2005). According to this research, leaders should seek to grow themselves along the chain of action logics from the base level (Opportunist) to the highest permutation (Alchemist). The majority of leaders rank in the middle of the chain as either Experts, who use expertise and constantly increasing knowledge to lead, or Achievers, who provide a challenging and supportive environment and recognize the importance of relationships. Experts comprise the largest category of actual managers in industry, and usually exhibit high technical competency, but low emotional intelligence. The research suggests that the leader can grow in his action logic, progressing towards the four optimal styles (in order): Achiever, Individualist, Strategist, and Alchemist. A leader lacking motivation to grow in style results in a stagnant team. Change agents who seek continual growth provide increasingly meaningful leadership. The change agent should strive towards the Strategist and Alchemist levels, which perform best at spearheading effective transformations (Rooke and Torbert, 2005).

Finally, the successful tranformationalist shows signs of 'servant leadership', a term coined by Robert Greenleaf (1977). Servant leaders ***serve*** first in leadership; the results of this goal are demonstrated by the growth and development of the followers. Servant leadership involves ten characteristics: listening, empathy, healing, awareness, persuasion, conceptualization, foresight, stewardship, commitment to growth of people, and building community. Though the servant leadership concept conflicts with the individualistic nature of many Americans, Greenleaf (1977) demonstrated that this style of leadership is powerful in change situations.

The change agent that displays true leadership, based on a consistent value system centered on others, and grows in his leadership style with each new experience, is best suited to use the change process proposed in this research.

The Model for Change

With a defined leader motivated to pursue change, the organization is now ready to identify steps to achieve the change. The model must create and sustain the prescribed change, overcoming the negative aspects and connotations of change, and promoting the *positive* parts of change. Kurt Lewin (1951), a pioneer in organizational development, formed a three-step model that forms a classic view of how change occurs (Figure 1 below). First, for change to occur, the organization must 'unfreeze' the current system of attitudes, behaviors and processes. Unfreezing the company means enabling individuals to embrace a new way of doing things, a new status quo. Lewin (1951) recommends creating change opportunities by reducing the forces preventing change, rather than overpowering this resistance. Second, make change on the unbalanced system according to a planned change program. Finally, 'refreeze' the system after the change is made, allowing the system to return to a new equilibrium that includes the desired change. Lewin's theory for producing change is beneficial because it reduces forces preventing change, rather than simply 'bowling over' forces maintaining the status quo.

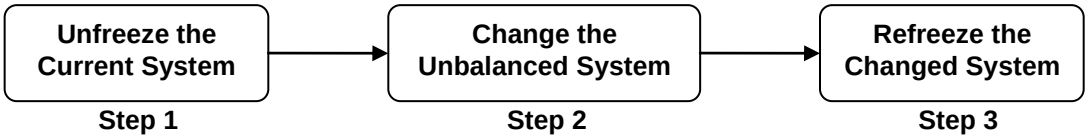

Figure 1: The Classic Model for Achieving Change

Lewin's model finds application in public agencies. Culture and attitudes are often firmly entrenched in a public agency, making change difficult. The methods frequently used in the government, which usually features traditional hierarchical and 'top-down' management, include forcing change by authority (Stanley et al, 2003). Therefore, instead of forcing change by authority and/or power, the change agent seeks employee agreement and participation. Once resistance is willingly removed, change occurs more smoothly and with a greater level of acceptance (Gibson et al, 2006).

Several more recent theories have sought to build upon Lewin's initial model. The Positive Model, for instance, departs from Lewin's model in a significant manner. Previous models focused on

identifying problems within the organization and crafting solutions to those problems. The Positive Model, however, identifies what is working well, develops a picture of the organization when it is in this successful state, and works to build off of that success to achieve even more. The focus is a positive orientation centered on values and expectations that moves the organization from 'what is' to 'what could be' (Cummings and Worley, 2005). Given the inherent resistance to change, particularly in a public agency (discussed later in the paper), the positive focus infused by this model is recommended.

The discussion of Lewin's model and its refinements provides a general understanding of how change occurs. Now, a specific change model is proposed for application in specific change initiatives. This recommended method for achieving change is proposed based on work by John Kotter. Kotter (1995) uses the basic understanding of change mechanics from Lewin's theory to suggest eight steps to change management. Following a review of change process literature, the author finds Kotter's process, summarized as follows, as most comprehensive and likely to succeed in a public agency setting.

Step 1: Communicate a sense of urgency. Kotter (1995) advises that the goal of this effort is to clearly expose the dangers or missed opportunities of not changing, and to drive the associated stakeholders away from the status quo. Establishing why the change must happen ***now*** motivates movement by exposing the need in detail. Since public agencies are frequently slow to depart from the historical processes, communicate this sense of urgency by sharing a compelling reason for change.

Step 2: Form a powerful guiding coalition. In Kotter's (1995) model, the challenges of change require a powerful group generates momentum. Identify key people and positions whose support develops the critical mass required to begin moving towards the change. Understand where resistance may form among that group, as well as the priorities guiding each member. Develop a plan to attain commitment from these members, and do not continue to the next step until the support is gained. Because authority and responsibilities are often spread across several sections or areas with competing motivations in a governmental setting, take time to identify all parties that hold influence over areas of needed change.

Step 3: Create a vision. Once an urgent need is identified and the right power brokers are assembled, mobilize the group to craft a vision that will focus the group and unite them in the pursuit of complementary goals. Take care not to pass through this phase too quickly, ensuring that the coalition agrees to the purpose and goals of the actions. Without this agreement, disjointed efforts will likely produce only temporary change. Public agencies such as VDOT operate partially as a 'stovepipe' and partly as a matrix organization (Gibson et al., 2006). To the extent that it is a 'stovepipe' organization, section managers provide direction to groups of specialized personnel; without a clear goal, these separate managers can lead each of their sections in vastly diverse directions. More recently, however, in an effort to become leaner, VDOT has adopted a matrix approach. Managers share resources to accomplish segments of work, as when Materials or Bridge Section personnel are assigned to a construction project. In this case, personnel have multiple managers directing their work. Without a

unified goal, personnel performing the work of change become confused upon receiving conflicting messages from various managers, and do not know which goal to pursue.

Step 4: Communicate the vision. Once the vision is crafted, the coalition must share it with all who will play a role in implementing the change, which usually extends beyond the members of the guiding coalition. In this phase, communicate often and through many vehicles, led by a vocal commitment from top management. Excitement about the vision from the organization's leaders lends credibility to the effort. Convey why the change is necessary and emphasize that the change is possible. Personnel in public agencies hear rumors of change constantly from many sources. Only when that communication is repeated by multiple people in positions of responsibility, and reinforced by their direct supervisors, will they begin to accept the vision.

Step 5: Empower others to act on the vision. The primary action in this step is to remove obstacles to the change, which may include commitment to the current system, structure impediments, or failure by some in top management to buy in. Obstacles in public agencies tend to center around resistance to change and a bureaucratic structure that restricts or limits change. Furthermore, public agencies are often risk-averse (and provide no incentive to change), so the leader must encourage risk and create an environment encouraging new ideas throughout the change process.

Step 6: Plan short term wins during the change period. Kotter (1995) contends that because production decreases and uncertainty increases during a period of change, momentum is maintained by developing short term goals that are quickly achievable. These little victories allow the group to tangibly observe a taste of the full benefits to come when the change is complete, inspiring them towards continued participation. Without these early re-motivators, urgency level will drop and members may forget exactly why they were first drawn to the vision. Top management also lends continued support after seeing performance improvements directly related to the change. The culture that resists change in public agencies will quickly seek to return to the norm if the benefits are not reinforced early in the process. Members are encouraged when their efforts to try the change are rewarded with undeniable success.

Step 7: Continue striving for additional change. Kotter (1995) states that the greatest danger to permanent change is becoming satisfied with small victories, and stopping the change effort too soon. A well crafted vision ensures that the goal is not too easily achieved. If change stops with small, insignificant modifications, tradition will eventually reappear and the changes will not last over time. Use the success and credibility gained from the small achievements to encourage greater change. Do not stop short of the envisioned future defined by the audacious goals. Tradition is one of the greatest enemies (as well as one of the greatest strengths) of the public agency. The tendency to return to old habits means that the change process must continue steadily and without break to ensure goals are met.

Step 8: Institutionalize the new approaches. One of the originally stated goals of change was to sustain the change over time. To become the new paradigm and status quo, the organization must

institutionalize the new approaches as standards. Truly inculcated change is tested when the original change agent leaves the organization or the position held during the change. Sustaining the change means developing future leaders through succession planning that understand and believe in the change. In VDOT, large percentages of current personnel are either nearing retirement or fairly early in their careers. This demographic leaves an experience gap that leaders must plan for by developing future leaders that possess a commitment to the change.

By adhering to this process, an organization can improve its chances of succeeding at producing lasting change. However, even following these steps, obstacles to change will appear.

The Challenges of Change

Once a compelling case for change is made and a framework for structuring change efforts is articulated, the final part of the process is to understand common challenges faced in pursuing change. Resistance is the most common barrier to change that all change agents must address (Bonham, 2006). Assembling a comprehensive plan and following the aforementioned steps in the planning process will decrease the resistance encountered, but will not eliminate it. Therefore, the change agent must take steps to understand resistance and plan to remove it. As mentioned previously, Lewin's Model (1951) suggests that the goal is to reduce the forces preventing change, rather than simply pushing change forward. Instead of crusading on a mission for change, the most successful change leaders are designers of a learning process (Senge, 1990). The learning process reduces resistance.

To successfully implement a change process designed to address potential sources of resistance, the change agent must first recognize key sources of opposition. In its most basic form, resistance is caused by a perceived threat, usually to some norm or status quo solidly established within the organization. These threats may influence employees at the individual level, the group level, or the organizational level (Cummings and Worley, 2005). Upon recognizing forms of resistance, the leader observes which level is the primary source.

Some sources of resistance derive from individual-level responses to conscious threats. Employees may simply fear change and have a low tolerance for the unknown, though usually other factors apply. Some resistance results from individuals losing something they value, such as a particular structure, system, responsibility, power base, or interrelationship. Furthermore, resistance may come from a lack of understanding of why change is occurring. In contrast, some individuals feel they do understand the proposed change, but disagree with the assessment that change is necessary or with the method by which change is pursued (Gibson et al, 2006).

Conversely, some sources of resistance are not consciously recognized. In a psychological phenomenon labeled a 'competing commitment' by Robert Kegan and Lisa Laskow Lahey (2001), an employee convinces himself and others that he is committed to a particular change. However, though he supports the primary objective of the change, he may subconsciously fear a secondary result or byproduct produced. For instance, though an employee may support a reorganization initiative to

improve efficiency and productivity, perhaps he fears the loss of working relationships or is nervous about his ability to succeed with new responsibilities. As a result, he applies physical and mental effort to resist the change. In this case, there is not open opposition, but rather an "immunity to change" – an equally strong commitment to keep things the same (Kegan and Lahey, 2001).

Resistance may also occur on more of a group or organizational level. Conditions present within the organization at the time of the change may limit the ability of the company as a whole to transform. One limiting condition is the leadership climate of the group or organization. As mentioned previously, full support of top management is crucial to achieving change. If the style or practices of the leader do not reinforce a positive attitude towards the change, the long term success is limited. The formal organization is a second limiting condition. The direction, policy and practices of the formal organization must align with the proposed change. Changes that are not compatible (or directly conflict) with these characteristics of the organization will also fail to fully succeed. Finally, the norms and behavior of the informal organization, the culture, exerts strong forces on any change initiative. The stronger the company's culture, the more the group or organization will naturally seek to maintain the status quo (Gibson et al, 2006). The existence of these limiting factors greatly influences change.

In another example of organization-level resistance, sometimes resistance to change is systemic, a natural response of the system. Whenever large scale systems (for example, complex organizations) are moved out of balance, the system will naturally act to correct the unbalance (in this case, change). Likewise, most individuals in the organization align personal goals with those of the system, reinforcing the momentum of the system. The natural balancing that occurs is not planned or conscious resistance per se, though it operates very much like resistance in its 'balancing' effect on change measures (Senge, 1990). Like a transplanted organ, sometimes the system rejects the change.

Addressing Resistance

Once resistance and its source is recognized, actions are taken to remove the resistance to effectively implement the change. The basic steps for accomplishing change were previously discussed, and are not repeated here. However, key components of removing resistance start with creating a readiness to change. The change agent prepares employees by alerting the organization to the various pressures to change. Once pressures are identified, the revealed differences between the current state of the organization and the desired state powerfully motivate the company to change. Finally, the change agent sets up positive and credible expectations for what the change will accomplish, often serving as a self-fulfilling prophecy for success (Cummings and Worley, 2005).

The change agent must then identify how people are experiencing change and the full nature of their resistance (or competing commitments), by providing empathy and support. The organization must learn why individuals resist the change, and whether the company has unwittingly introduced limiting conditions (Gibson et al, 2006). Train managers to look for resistance in the employees, which may appear in forms of confusion, denial, silence, easy agreement or direct criticism. When noticing these

symptoms, managers must provide additional time and information to the employee. They should maintain the focus of the organization and provide leadership and positive attitudes towards the change, all while reflecting an understanding position that will reaffirm their care and concern for the worker (Bonham, 2006). Respecting the opinions of the resistant employee allows her to share her feelings. The change agent should respond with open and honest information that reiterates the vision and direction of the company (Bonham, 2006). Communication is critical, and information must flow frequently through various channels (though always including communication from the top management). Employees must understand why change is occurring and the full breadth of benefits. Finally, employee participation leads to a higher quality change effort that earns the buy-in of those who help forge it.

Given this final piece of the process, the entire proposed process is defined in terms of the reason for change, the process for change, and the challenges of change, represented in Figure 2 below.

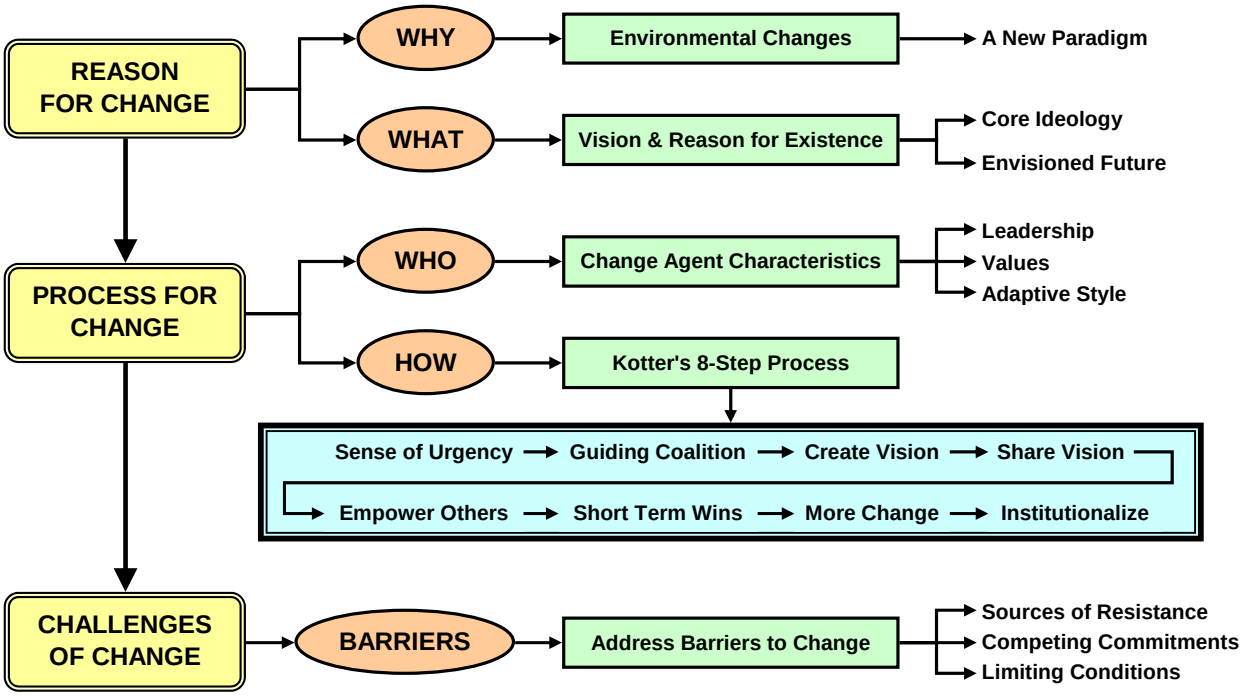

Figure 2: The Proposed Change Process to Implement in VDOT

Application of the Model

Having defined a proposed process for implementing change efforts, the model is now applied to an actual change effort performed by the Virginia Department of Transportation (VDOT) as an example of how each of the steps appears in practice. Like most organizations, VDOT also finds itself in the midst of shifting paradigms and intense internal and external pressures. And, like others, VDOT must identify the reasons why it must change and what should change prior to embarking on a change program. In short, VDOT models a typical public agency with the challenges and considerations it faces in making change

decisions. Therefore, for the purposes of this research, the proposed model is evaluated in the following actual environment VDOT leaders confronted when seeking to implement a particular change.

Background on the Change Effort

At the time of the new millennium, VDOT was failing to complete its projects on time; in fact VDOT completed only 30% of its projects on time during fiscal year 2003 (VA General Assembly, 2004). One of the reasons for this inability to complete on time was a failure by VDOT to set accurate contract time limits. In response, VDOT set an internal deadline of January 1, 2008 by which all contract time limits must be set by an accurate schedule. At this point, VDOT realized that it did not have the expertise internally to create accurate schedules for each project. In response, VDOT formed a partnership with Virginia Tech to develop scheduling experts within the Department.

In addition to scheduling experts, VDOT realized it needed tools to help its engineers develop schedules. One tool that VDOT hired Virginia Tech to develop was a database used to track, store and retrieve historical performance times (daily production) for key activities on VDOT projects. Engineers would then use these performance times when creating schedules to estimate activity durations.

Virginia Tech started researching and developing this software program in 2005, and planned to complete in mid 2007. The implementation in VDOT could begin thereafter. Implementation involves working with VDOT field personnel to collect data from construction sites all over the state. VDOT needed someone to implement the system within the Department, preparing and training inspectors to record the performance time data. The author, an Area Construction Engineer in VDOT, was selected to attend Virginia Tech and continue this research, and act as the change agent to implement the system within the Department. The author was then tasked with developing and initiating a plan to achieve this change, which involves coordinating the data collection efforts of hundreds of inspectors. The change process developed in this research and discussed in this paper was then used to implement the change. The following summarizes how each step of the process was carried out in application.

The Reasons for Change

In applying the proposed model to the software implementation, the first step is to define the reason for the change. In the subject case, change is required by several environmental factors. Federal Highway Administration (FHWA) regulation requires that State DOT's use a uniform and reasonable method for obtaining contract time limits (FHWA, 2002). In response, VDOT set the January 1, 2008 deadline to set all contract time limits by a schedule. The data from the software will improve VDOT's ability to achieve this goal by providing a tool that currently does not exist. As discussed above, VDOT recognized it lacked sufficient expertise to create and review schedules, particularly in the area of production rates, and the software was an opportunity to fill the gap. Finally, several other potential applications for the software were identified, resulting in the evaluation that VDOT truly needed this tool to meet the current and changing conditions in the marketplace. As such, VDOT leaders decided there was

sufficient reason to pursue change from the current documentation practices to include performance time data collection.

The second part of defining a reason for change is to identify what needs to change. Any change implemented in VDOT should relate to its core purpose and values. VDOT's core purpose is to build and maintain roadways, bridges and tunnels to allow safe, efficient and effective travel throughout the Commonwealth of Virginia. The Department's core values include financial responsibility, quality products, excellent customer service, and safety in every aspect of the work. Therefore, any change should fit this vision. Additionally, each resource used in the organization should add value to this overall goal. If the resource does not add value, VDOT should eliminate that action. Specifically, the change required by implementing the software system was evaluated to determine whether it added value to the organization and helped it achieve the core purpose and values. In this case, the software system will assist the Department with better financial responsibility by accurately setting contract times and receiving lower bids from contractors. It will improve customer service by allowing VDOT to meet its project delivery commitments through setting reasonable completion dates. Though this system will not directly improve the freedom with which the public travels the roads of Virginia, it will assist individual employees in performing the value-adding responsibilities of their position, which eventually supports the overall purpose of the organization. Therefore, in analyzing what to change, VDOT leaders determined that implementing this system and populating it with field data promotes the core ideologies of the organization, while enhancing its envisioned future of being the best run Department of Transportation in the country. Therefore, with sufficient reason for change, the software implementation was authorized.

The Process for Change

The second step in the change effort is to carry out the process of implementing the software system. First, a change agent was identified. The demands of the change in question were partly technical, and included incorporating the software system into the Department's documentation system and developing the training necessary to begin data collection. The change was also partly cultural, working with the people involved to prepare them for change and developing a coalition powerful enough to achieve change. Therefore, the required change agent needed technical expertise and authority within the Department to make change, while possessing sufficient people skills to garner consensus and lead resistant parties in the desired direction.

Upon realizing the need for such a change agent to move the software project from the development phase to implementation, the Department selected the author to become the agent of change. The author was suited to provide the technical guidance needed to accomplish change due to experience with scheduling and with the software system VDOT would use to collect the data. Furthermore, prior successful leadership and management initiatives indicated that the author might also be suited to lead the cultural change. To further train the author in organizational development and people skills, VDOT sent him to graduate school at Virginia Tech. Classes were focused around

improving deficiencies in leadership ability. Through this process, the author became far more proficient and knowledgeable about leadership with a strong value basis, as well as using various and evolving forms of leadership to accomplish change in a challenging setting.

After selecting a change agent, VDOT could now implement the change model proposed in this research to implement the software system. In applying the proposed change model to the implementation of the software within VDOT, each step of Kotter's Model (1995) was followed before proceeding to the next stage.

Step 1: Communicate a sense of urgency. To create a sense of urgency, the change agent communicated to top decision makers within the Department the need for the change. Clearly, the need for a means to obtain performance time data existed; what elevated the urgency of the need was the internal January 1, 2008 deadline by which all contract time limits must be set by a schedule. The need and the quickly approaching deadline were repeated often to all involved, successfully raising the felt need for the data. The approach prompted one key decision maker to state concerning the system, "I need this information as soon as possible", delivering the mandate needed for change.

Step 2: Form a powerful guiding coalition. Before settling on a vision, the change agent ensured support by key participants in the Department. First, the agent's involvement in the research was authorized and funded by the Acting Commissioner and the Chief Engineer, providing support from top management. However, with a new Commissioner hired in the early stages of the change effort and changing priorities within the Department, the change agent verified support of key people. A guiding coalition was formed by the VT-VDOT partnership in the form of an advisory panel, which included an Assistant Division Administrator, the State Scheduling Engineer, several District Construction Engineers, and members of the contracting and consulting community. The Chief Engineer and State Construction Engineer were consulted early and often, and gave their full support to the partnership, which was again confirmed by adequate funding and a mandate to implement the changes necessary to meet the January 1st deadline.

Step 3: Create a vision. The next step was to create a vision hearty enough to guide the work and inspire everyone involved. The implementation of the system featured a long period of data collection (at least a year) prior to reaping the benefits of producing performance times, meaning the stakeholders' desire for the benefits must endure without actually enjoying them. The change agent spent significant time meeting with stakeholders to create the vision, including executive management, the partnership advisory board, the construction engineers, inspectors who would actually use the system, and Virginia Tech faculty. After raising many questions and repeatedly requesting participation in defining what the system would actually do and how to collect the data, the change agent formed a vision for the system. The vision was to improve on-time project completion as a result of accurate contract completion dates derived from well developed project schedules; the tool is a performance time data system capable of storing field performance data collected through the Department's construction management software

program, *Site Manager*. The system then retrieves performance time information for individual activities, filtered by project type, location, size or season of work. This vision was supported by all parties.

Step 4: Communicate the vision. Once the vision was defined, the change agent proceeded to communicate the vision. Implementation of the change would affect multiple parties. An attempt was made to meet personally with each of these groups individually, and even to do so multiple times as the technical development of the system progressed. At the statewide Scheduling Conference, the change agent discussed progress with District Construction Engineers and Area Construction Engineers, both of which are responsible for enabling data collection at the project level. Further discussion occurred at separate meetings of District Construction Engineers and Area Construction Engineers. Given inadequate representation by one of the Department's nine districts in these previous meetings, the change agent called a special meeting for leaders of this one district to sell the change specifically to them. In efforts to meet with other groups directly affected by the change, the agent also met with Information Technology, a *Site Manager* user's group, the District Contract Administrators, and the inspectors. Finally, the agent met with other groups that would eventually benefit from the implementation, though not necessarily share in the burden of data collection, such as the District Preliminary Engineers and a group of external contractors and consultants. The agent witnessed increased commitment and excitement with each additional communication effort pursued.

Step 5: Empower others to act. The fifth step in the model involves empowering others to act on the vision, removing obstacles. The greatest obstacles to implementation of the system lay in a general resistance to the massive data collection effort needed to populate the database. Furthermore, the inspectors that would collect the data are some of the most overloaded personnel in VDOT. The roll-out of this system coincided with an unrelated but universally unpopular contractor evaluation system that required significant extra effort from the inspection staff. To overcome this obstacle, the change agent worked to develop the most simple data collection method possible, which was vastly easier to use than the method originally developed by Virginia Tech. This change, with repeated communication and participation from lower level managers, helped overcome the resistance. Another obstacle was obtaining the information technology (IT) assistance to make changes to *Site Manager* to accommodate the data collection process. The change agent developed a business plan detailing the need for the change, and used the authority of the Division Administrator and Chief Engineer to set the priorities for IT and expedite the completion of the software modifications.

Step 6: Plan short term wins during the change period. Next, the change agent planned short term victories to sustain momentum. Given that the completely populated database of field performance times would require at least an entire construction season to develop, the partnership worked to quickly create an Experience Based Knowledge (EBK) database of performance times using estimates from engineers, estimators, and contractors all across the state. This EBK database produced reliable performance times

based on specific project characteristics, and was used to help create schedules during the data collection period of the field performance data. Positive reports from the EBK effort increased the anticipation around the entire performance time data project. In addition, once data population begins in mid-2007, the change agent will distribute early results of the data collected to show progress and demonstrate the possibilities of the system.

Step 7: Continue striving for additional change. In seeking continued change, the change agent is aware of declaring victory too soon. Some team members recommended stopping the collecting of performance time data once the database was fully populated. The change agent saw the danger in only minimally populating the database and insisted on planning for continual data collection for the near future. Another source of sub-optimal development is in the platform of the system. At this time, the system will function in a 'stand-alone' mode on individual computer desktops. Periodic updates to database information distributed to all users will keep the system current. However, the partnership, in concert with IT, realized that the optimal platform may include a web enabled system that pulls continuously updated data from *Site Manager*. This change will require additional effort which is not possible at this time, but should become the ultimate goal for the system. Continuous improvement will mandate striving towards this greater goal, even after the minimal implementation is completed.

Step 8: Institutionalize the new approaches. Finally, VDOT must institutionalize the change to sustain it over time. The change agent has marketed these changes to the younger generation of leaders within VDOT, who, in general, are already more supportive of the concept than the more experienced leaders. These leaders will require little coaxing to make the system a standard operating procedure once the benefits are fully realized. To aid the process, the change agent created a maintenance team to maintain and update the system, keeping it relevant and developing fresh applications to increase its usefulness over time. These efforts are anticipated to help this process become the standard method VDOT uses to access performance time data.

The Challenges of Change

Separate from the eight-step change process, the researcher performed an analysis on the potential resistance for change as a result of the proposed implementation. Discussions with each of the stakeholder groups revealed levels of resistance present. Executive Management was highly supportive of the endeavor, and would only need frequent updates on progress and reminders to push changes. Therefore, the change agent focused only on the communication needs with this level of the organization.

Top and middle District Management were expected to respond somewhat more hesitantly initially, primarily due to the added requirements placed on inspectors performing the record keeping. A majority within VDOT agree that the Inspection Staff is already over-taxed, particularly in regards to the cumbersome *Site Manager* software, such that efforts were initiated by the previous Commissioner to identify means of reducing the Inspectors' workload (Commissioner's 2006 Action Plan). The change

agent anticipated that selling the benefits to this group, especially the Construction Managers, would prove challenging. Therefore, the change agent planned for resistance at the individual level in the form of low tolerance for change, as well as disagreement with the need for the change and competing commitments to change. On an organizational level, the organization's culture of resistance to change was expected to play a role.

In order to address these concerns, the change agent made a plan to communicate the change initiative to each of the stakeholders in multiple different settings to prepare VDOT for change. Early discussions focused on the benefits of this performance time information, and current lack of a means to obtain the information. Meanwhile, top decision makers were involved in each step of the process, so that support and buy-in was obtained and maintained throughout each step. This group of top and middle District management was expected to provide the most innovative and useful suggestions for effective implementation. Therefore, the change agent focused on including these groups in making decisions about the implementation. Surveys solicited recommendations for implementing the change, and face-to-face meetings provided opportunity for these managers to provide input. Finally, meetings were held with the actual inspectors that would conduct the data collection. Members of the partnership, in concert with the inspectors' supervisors, would meet with the inspectors to discuss the process, answer concerns and questions, and provide them with the best possible understanding of what was occurring and why. Over time, the resistance to the system decreased.

The final stakeholder that might provide resistance was the Information Technology Section, which would perform modifications to *SiteManager* to enable data collection, and then maintain the data retrieval system after implementation. This group produced an unexpected source of resistance, as lack of resources prevented IT from performing the work quickly. In addition, IT was skeptical that the software program developed by the Partnership would meet VDOT's design requirements or handle the volume of data to be collected. To remove the resistance, the change agent met with members of IT to discuss what was needed and why. The members of IT who would actually perform the work were included in discussions early and often, so they had a firm understanding of the need. The change agent wrote a detailed business plan identifying how VDOT would use the program, and used the support of the VDOT top level management to influence the priority of this project within IT.

Using this change process, the implementation of the performance time data system progressed smoothly in VDOT through the date of this research. The long term sustainability of the change as a result of following the model is not yet evident, but is expected to be successful due to the careful planning conducted and steps taken to ensure success.

Conclusion

The many challenges of change initiatives demand a systematic approach to achieving change. By following the model proposed in this paper for achieving change in a public agency, the Virginia Department of Transportation is in the process of implementing a software system that involves significant

change for numerous individuals. VDOT successfully defined a reason for change by identifying the why and the what of change, followed a process for change by selecting who to lead change and using Kotter's Model to guide the 'how' of change, and overcame the challenges of change by recognizing and reducing the barriers. By adhering to this plan for change, other public agencies and organizations may also experience successful change initiatives in their efforts to respond in the face of changing environmental factors and market opportunities, and bring about the desired future for the organization.

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