Controlling Organizational Change:
Beyond the Nightmare

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The only thing constant is change! Organizational change can be a nightmare; this is especially true with process improvement. There are many challenges connected with transitioning new ideas and changes within an organization. There are numerous tried, true, and innovative theories for achieving organizational change. By applying a combination of these theories or considering the implications of each, it can help make organizations flexible enough to be prepared for and realize change as it happens.

As Ann popped another piece of candy in her mouth, she steeled herself in preparation for starting the weekly Engineering Process Group (EPG) meeting. Lately, the meetings were becoming pretty miserable. Instead of progress reports, the meeting tended to be a forum for complaints. Usually, complaints were very welcome since they alerted the group to problems that needed to be resolved, but the complaints were becoming less constructive and more destructive. She had done all the things the experts suggested to make the EPG meeting and the process improvement effort more successful. She gave everyone a chance to participate, listened to complaints and tried to resolve them or elevate them as needed, worked closely with projects, and made sure there was generous participation in the meetings from all projects. Ann generally put 250 percent into making the process improvement effort work for the organization – she even provided goodies for the meetings. None of these things seemed to be working, and she was at a loss as to where to turn.

Coming back from her mind wanderings, Ann decided she better just get started with the meeting. She put her best face forward, smiled, and said, "Good morning everyone. Let's get the meeting started." She heard a smattering of good mornings from around the room.

"I think the only one missing is John. He called me earlier to say he had an emergency on his project and couldn't make it," Ann continued. "Let's start the

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meeting out talking about what progress has been made on the actions assigned to each action team…"

Before she could finish, Mike blurted out, "Ann, we haven't been able to make much progress at all. With all the problems we've been seeing throughout the organization, we seem to be taking three steps forward only to be pushed five steps back again. If we don't resolve the underlying issues, we're wasting our time." Mike was a project manager from one of the company's highest profile projects. He always had great ideas and worked well with the EPG. He was very enthusiastic about the effort since he saw how much it would help his project be more successful. However, like the rest of the group, Mike was becoming increasingly frustrated.

The room felt like it was closing in on Ann and she didn't know what to do, recovering quickly since this was not the first time she had been up against the wall, Ann asked, "So give me some ideas. I agree with you Mike but we need another approach."

She heard the general shuffling, papers rustling, and covered coughs around the room as she paused for ideas. Ann decided it was time to lay it on the line. "Folks, this may be our last chance. I heard through the grapevine that Mr. Jones is talking about cutting our funding for the process improvement effort. He hasn't seen much progress lately and has heard about the problems we've been encountering making the changes needed in this organization to implement the processes. At first it seemed as if we were going gangbusters, then we ran out of gas without a gas can."

Sound familiar? It is for many organizations trying to make much needed organizational changes. Too many organizations experience unorganized, uncontrolled chaos during process improvement efforts. So what is the answer to resolving these typical problems [1]?

The Nightmare of Organizational Change

Controlling the changes that occur during a process improvement effort is one of the most difficult but one of the most important aspects of the effort. There are numerous theories that can be used in combination to assist organizations in the organizational change effort that are key to the entire process improvement effort.

Rational Change

Peter F. Drucker, called the father of modern management, stated the following:

> It is not true, as a good many industrial psychologists assert, that human nature resists change. On the contrary, no being in heaven or earth is greedier for new

Table 1: *Handwriting on the Wall*

Change Happens
Someone keeps moving the cheese.
Anticipate Change
Get ready for the cheese to move.
Monitor Change
Smell the cheese often so you know when it is getting old.
Adapt to Change Quickly
The quicker you let go of old cheese, the sooner you can enjoy new cheese.
Change
Move with the cheese.
Enjoy Change
Savor the adventure and enjoy the taste of new cheese.
Be Ready to Enjoy Change Quickly, and Enjoy it Again
Someone will keep moving the cheese.

things. But there are conditions for man's readiness for change. The change must appear rational to him ... [2]

The key is that any change must appear rational especially when trying to effect an entire organization by making it more effective with documented and used processes. You must appeal to a staff's rational side. It is a matter of finding the right methods to use to make staff realize that the changes are rational and work in their favor.

At the onset, process engineers must realize that there will be resistance to change but if it is managed and promoted properly, the resistance can be minimized and controlled.

Resistance to Change

There are many methods of identifying typical resistance behaviors in order to manage and minimize resistance to changes introduced as part of the process improvement effort. Spenser Johnson, M.D. in his book, *Who Moved My Cheese?* said, "Movement in a new direction helps you find new cheese [3]." This is especially appropriate for process maturity. Process maturity is constant change and evolution. Sometimes change is in a totally new direction or it can be in the same positive direction depending on where an organization is in the process improvement lifecycle. With any change comes adjustment in varying degrees to the way things are done; in other words, finding new cheese. *Who Moved My Cheese?* describes the reactions of four mice, Scurry, Sniff, Haw, and Hem when change occurs in their lives, symbolized by moving cheese in the maze. The cheese represents elements in life such as career, happiness, financial success, relationships, peace of mind, health, etc. Table 1 illustrates Johnson's handwriting on the wall. This is a simplified version of various human behaviors reacting to change, but if these basic human elements are taken into consideration when managing and controlling change, the degree of success goes up substantially.

Another popular theory in studying human behavior and resistance to change is the Everett Roger's Adoption Curve [4]. Roger's theory concerns how new ideas are disseminated and accepted by groups of people. Even though many have shown that there are some issues with the Adoption Curve, it is still a good rule of thumb for adoption of new technologies and ideas. Simply realizing that change is adopted at different rates by
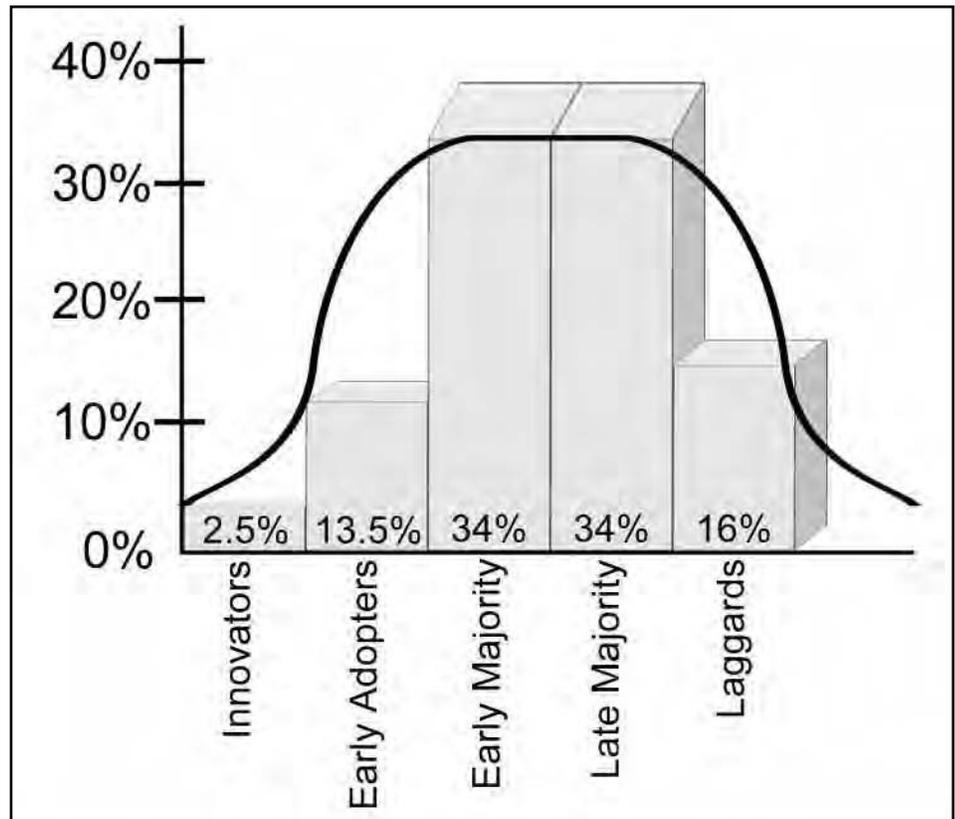

Figure 1: *Roger's Adoption Curve*

various people can help with planning and control of the organizational change effort. Roger's theory holds that given a normal population distribution, people accept new ideas and innovation at a different rate. He defines an innovation as *an idea, practice, or object that is perceived as new by an individual or other unit of adoption* [4]. He defined various adopters as follows:

- 2.5 percent ==> innovators.
- 13.5 percent ==> early adopters.
- 34 percent ==> early majority (early mainstream).
- 34 percent ==> late majority (late mainstream).
- 16 percent ==> laggards.

This distribution of adopters results in a bell curve, as shown in Figure 1.

The innovators are the few who first take up a new practice or listen to a new idea. The early adopters come along next and are great for communicating the effort to others since many times these are the social leaders. Once the social leaders take up a new idea, the early majority takes up the idea fairly quickly followed by the late majority. Finally, the laggards are typically the last to consider a new idea; they tend to adopt innovation very slowly. You must always account for a few laggards to bring up the rear.

A *chasm* has been defined between the early adopters and the early majority.

Figure 2 illustrates the *chasm*. This *chasm* implies that the transfer of information flows from innovators to early adopters easily but that it is difficult to translate

Figure 2: *Roger's Adoption Curve Chasm*
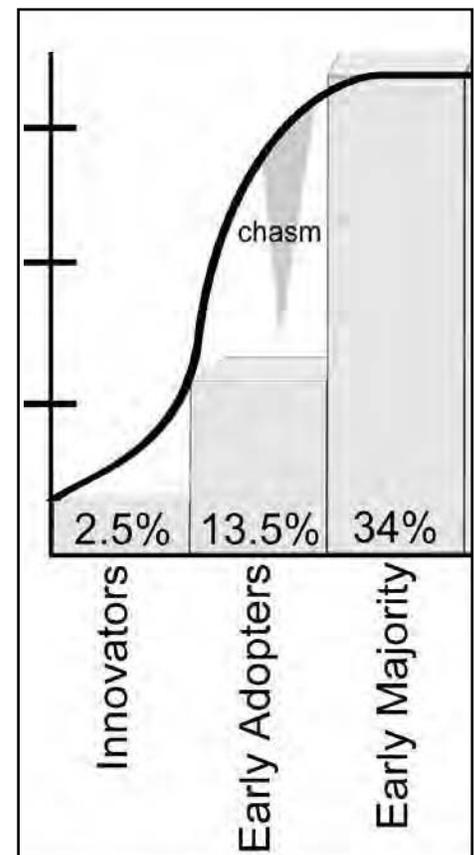
Adoption Curve Category	Learning Curve	Effort Required for Adoption	Continued Support of Effort	Retention of Adopter
innovator	rapid learners	no recruiting effort	may be low	steadfast
early adopters	rapid learning	minor effort	moderate; in spurts	dependable
early majority	reasonable learning curve	substantial effort	higher and continuous	fickle
late majority	trainable but slow	major effort	highest continuous support	brittle
laggards	typically uninterested	typically uninterested	not feasible	

Table 2: *Adoption Curve Effort and Learning*

that into action and acceptance by the early majority which is sometimes called the early mainstream. This is where the marketing of the effort and the resulting processes becomes most important; you have to get the word out to get results.

Universities use this curve to define the effort required for each category of human behavior to recruit and retain adopters of new information and provide the appropriate training. Table 2 summarizes some of the data collected and used by universities.

The Convergence Model, Roger's latest model, is also worth exploring. It emphasizes the need for a continual process of interpretation and response, leading to an increased degree of mutual understanding between sender and receiver [4].

Roger's human behaviors are not too much different than the characters in *Who Moved My Cheese?* Scurry is the innovator who goes into action immediately upon change or something new – he finds the new cheese and moves things along. Sniff is the early adopter. He sniffs out changes and systematically searches out new cheese (don't let the fact that he's a mouse fool you). Haw is the early-to-late majority who is reluctant to change and fearful but overcomes fears and moves with the change – he's the one that puts the writing on the wall hoping Hem will follow him. Finally, Hem is the laggard who says no change under any circumstances – his arms are folded against any change.

The key to using these two theories is to know where to focus your resources. It also tells you who may be interested in helping advertise your effort; word of mouth and advertisement of even the smallest changes are key ways of getting others on board for organizational change. Be careful not to pigeon-hole anyone though because the surprise may come when a perceived innovator becomes a laggard or jumps ship when the honeymoon period is over. Even more surprising is when a perceived laggard becomes an early adopter, thus becoming one of your best assets to promoting change and overcoming resistance.

The Science of Organizational Change

Experts have been relating organizational change to other arenas. Organizational change can be better managed by studying other unlikely, more scientific arenas such as Chaos Theory, open systems as related to biology and planets, quantum physics and leadership, and anthropology. These theories not only help us further understand methods for becoming successful organizations but help make us flexible enough to make effective changes.

The Chaos Theory

The Chaos Theory describes systems apparently disordered but having an underlying order. The theory is about finding the underlying order in apparently random data. In ancient Greece thousands of years ago, the cause and effect rules were introduced as a philosophical belief. Sometime around the 1500s, this concept was accepted as a scientific theory. Isaac Newton's laws implied that everything that would occur would be based entirely on what happened right before. Henry Adams is credited with first describing chaos as, "Chaos often breeds life, when order breeds habit." He also said, "Chaos is the law of nature;

Order is the dream of man."

In 1846, the planet Neptune was discovered which had been predicted from the observation of deviations in Uranus' orbit. Oscar II, then the King of Sweden and Norway, initiated a mathematical competition in 1887 to celebrate his 60th birthday in 1889. He challenged anyone to prove or disprove that the solar system was stable. Henri Poincaré, sometimes called the *Father of Chaos*, was awarded the prize for his three-body problem in celestial mechanics where he provided the first mathematical description of chaotic motion. However, when a colleague found an error in his theory, the prize was taken away until he could find a new solution. After much consultation with colleagues, he found that there was no solution including use of Newton's Laws. Poincaré had been trying to find order in a system where there was no order; this error is now regarded as marking the birth of Chaos Theory.

Edward Lorenz, a meteorologist at Massachusetts Institute of Technology, has been called the first true experimenter in chaos in the 1960s because of his work on a weather prediction problem. Lorenz set up a computer with 12 equations to simulate the weather. This program theoretically predicted the weather, but in 1961 when he wanted to see the sequence again but wanted to save time, he started in the middle of the sequence and let it run. This sequence diverged from the original pattern. What he found was that the number had been stored with six decimal places in the original sequence and when he re-ran the program, he rounded the six decimals to only three decimal places to save paper. Where he should have gotten a sequence very close to the original, it had a huge effect on the resulting pattern. This is known as sensitive dependence on the initial conditions, which Lorenz found changes the long-term behavior of a system. He found that small changes on things lead to changes on a large scale. It was the classic example of chaos.

So, what does that have to do with managing organizational change? You cannot always predict what a system will do next, but you can put things in motion in smaller ways to perpetuate changes on a large scale. This premise can be used effectively during process improvement effort planning and throughout the effort to start the project off well. It can also be used effectively during continuous improvement to monitor how each change impacts the organization.

How a pattern eventually looks is

dependent upon the precision of the predicted initial conditions. Small inaccuracies or changes can have huge effects. During planning, a key element is setting the initial conditions to perpetuate change in the organization. By considering the importance of setting initial conditions such as management expectations, staff expectations, selection of actions to tackle, and who should be involved and to what degree in the effort, an organization will be able to provide a much more accurate action plan. During continuous improvement efforts, there will be many lessons learned to draw from when considering the initial conditions for change.

In his book *Chaos: Making a New Science*, James Gleick related chaos to the motion of a water wheel and found the following:

…water drips steadily into containers hanging on the wheel's rim. Each container drips steadily from a small hole. If the stream of water is slow, the top containers never fill fast enough to overcome friction, but if the stream is faster, the weight starts to turn the wheel. The rotation might become continuous. [5]

This holds true with process improvement as well. You must get things moving fast enough and keep the momentum going in order to make the organizational changes needed.

Gleick also points out the following:

… if the stream is so fast that the heavy containers swing all the way around the bottom and up the other side, the wheel might then slow, stop, and reverse its rotation, turning first one way and then the other. [5]

In other words, the spin becomes chaotic. As buckets pass under the water, how much the buckets fill depends upon the speed at which the wheel is turning.

The key is to keep the momentum going fast enough to effect change but not so fast that things become chaotic. On the other hand, with process improvement efforts, you can never let things settle down enough to stop the momentum since sometimes it is even harder to get the momentum going again – or it can reverse the progress already made. During subsequent planning and monitoring of a process improvement effort, this theory can be useful to ensure

that the momentum of the process improvement is continuous and progressive.

Open Systems
Many are starting to look at organizations as open systems to help define their structure. Dr. Helene Uhlfelder holds that organizations are much like the human body and our planet. In other words, examples of open systems are the human body and or solar system where the human body is composed of interacting biological cells and our solar system with planets, stars, etc. They are like an organization where each is engaged in active transactions with their environment. Uhlfelder states that, "An open system has certain characteristics that need to be understood if one is going to work in and change it" [6]. Some of the characteristics that she defines include the following:
1. Open systems are porous and have permeable boundaries.
2. Open systems are interdependent with surrounding systems and are composed of interdependent parts.
3. Open systems need to be dynamic and fluid to survive.
4. Open systems are interactive with their environment and must be adaptable.
5. In an open system, the whole is greater than the parts.
A key to organizational change in

Uhlfelder's theory holds that closed systems can result in entropy:

Entropy is an inverse measure of a system's capacity for change and means the system will eventually die from a lack of energy. Because open systems can import energy and can be dynamic and fluid, open systems can grow and change. [6]

Uhlfelder contends that systems should never strive for equilibrium and should always maintain a certain amount of dis-equilibrium as a necessity to foster change. As with ecology, she finds that departmental interdependency is a key to success; in other words, "what happens in one department affects what happens in another department. The key is for an organization to become an open system that is adaptive to allow "input and output with the environment, political and social institutions, and world events" [6]. Uhlfelder's Open System Organizations is illustrated in Figure 3.

For process improvement, each of the aspects of an open system should be considered during planning and monitoring of the process improvement effort. The impact of each of these key elements can have a significant impact on the effort. A process improvement effort should be handled just like any other project, hence, a risk management strategy

Figure 3: *Uhlfelder's Open System Organizations*
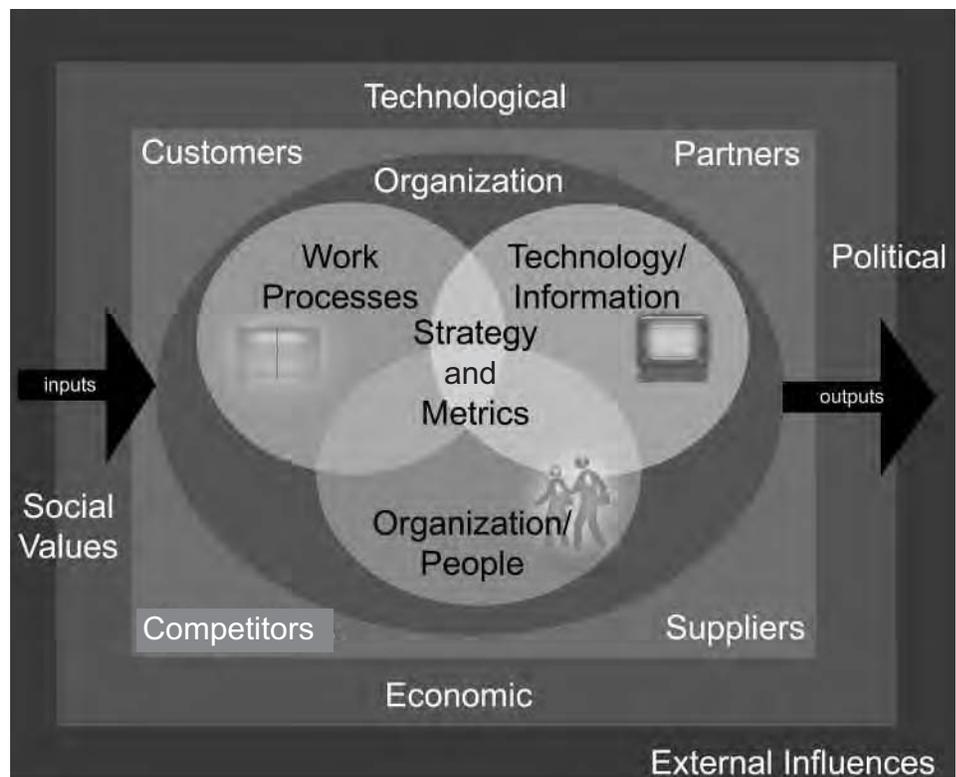
should be developed. Each of the elements in an open system should be considered when identifying risks, and the impacts to each element should be considered when developing a risk mitigation plan.

Each organization is very different so the key areas to consider will vary based on the organization's goals and objectives. The process improvement action plan is the best place to develop a strategy for handling each of the elements that are key to that organization.

Quantum Physics and Leadership

Margaret Wheatley in *Leadership and The New Science* applies quantum physics to leadership. The new science of quantum physics describes a universe *where order and change, autonomy and control were not great opposites that we had thought them to be. It was a world where change and constant creation signaled new ways of maintaining order and structure* [7].

Wheatley relates the *field theory to organizations which asserts that fields are unseen structures, occupying space and becoming known to us through their effects*. She holds that, *All employees, in any part of the company, who bumped against the field, would be influenced by it ... their energy would link with the field's form to create behavior congruent with the organization's goals*. If we *think of ideas as fields*, it will permeate the entire organization. She states that, *We need all of us out there, stating, clarifying, discussing, modeling, filling all of the space with the messages we care about. If we do that, fields develop – and with them the wondrous capacity to bring energy into form* [7].

This is especially appropriate for process improvement where participa-

Table 3: *Marketing Trends*

Rank	Technique
1	Affiliate programs
2	E-mail to customers
3	Public relations
4	Television
5	Outdoor
6	E-mail (opt-in lists)
7	Magazines
8	Radio
9	Direct mail
10	Sponsorships
11	Buttons
12	Banners
13	Newspapers

tion of the process users is a critical key to success of each process and the process improvement effort as a whole. Wheatley says that an organization's vision is actually a culmination of all the people who make up an organization as opposed to being handed down from management. The concept of ownership is a key where she discusses that *the best way to build ownership is to give over the creation process to those who will be charged with its implementation*. She holds that *It doesn't work to just ask people to sign on when they haven't been involved in the design process, when they haven't experienced the plan as a living, breathing thing* [7]. Participation in creating processes is a must for process improvement; it is a must in understanding and accepting a process.

Anthropology

Anthropology is being seen as more and more important in the world of business. Primarily, anthropology is the study of

> *"Organizations must be prepared to change quickly in response to changing markets and must be flexible enough to introduce new skills and technologies as appropriate."*

human behavior. There are many subfields in anthropology; the relevant one to organizational change is business anthropology. Business anthropology is the study of human behavior in complex organizational structures. Many universities are offering graduate degrees in business anthropology. Additionally, many large companies and the government are employing business anthropologists such as IBM, Intel, Microsoft, General Motors, and Xerox to name a few. They study the behavior of both the client and the company staff to determine what typical shared behaviors are demonstrated. These shared behaviors help in determining a strategy for effecting organizational change. By understanding what makes a certain group of people motivated and what expectations they have, you can determine the best methods for

employing processes and making them work within that particular organization.

Throughout history, each age demonstrated a shared behavioral pattern that defined the essentials in all realms of life (home, work, and recreation). Survival in each age was dependent upon differing factors. In the Stone Age, the keys to survival were food and shelter, where in the Industrial Age they were factories and equipment. In today's Information Age, survival means having the appropriate technical skills and knowledge as well as learning to manage shared behavioral patterns in order to make changes in a world that is changing at Internet speed. Organizations must be prepared to change quickly in response to changing markets and must be flexible enough to introduce new skills and technologies as appropriate. When developing processes for an organization, these premises should be considered to ensure that processes are as flexible as needed based on the environment and changing world.

The Perspective Factor

MC Escher is famous for his optical illusion art from the 1940s to the 1970s. He was well known for his impossible structures. A favorite is called Relativity that basically tells us that what you see is relative to where you're standing. When dealing with others' realities, we have to see things from their perspective and make it relative to them.

Each stakeholder is going to see something different; it is important to discuss a process based on their perspective. It all depends upon each of our perspectives. How you see something depends on what vantage point you are coming from. We all look at things differently based on our background, education, experience, and simply from where we are standing at the moment. It is key to process improvement, that process development staff and users work as a team to develop effective processes in order to develop effective products. If we look at things from each other's vantage point, the chance of success grows by leaps and bounds. Open communications and respect for each other's position is crucial for success.

As a process engineer developing processes for a project or organization, the key is to let the user know that when you're done you can simply walk away, but they need to be able to use the developed processes to accomplish their job. The process engineer must work with users to make the processes work for them, at the same time keeping in mind their perspec-

tive as well as that of the selected model or methodologies requirements.

Marketing Processes and Process Improvement

By studying marketing trends and methods, we can use some of the more effective methods for marketing process improvement and the resulting processes. Table 3 ranks some marketing methods according to Forrester Research [8]. Their ranking is based on Forrester's analysis of how popular or how often a method is used, and how effective for the organization that method is when marketing their products. The key for process improvement is knowing what methods are available and their likelihood of being effective in a specific organization. Many variables need to be considered such as size, office distribution, communication methods available, cost of each method, and overall impact of each method to the organization.

Many of these can be very effective in marketing process improvement throughout an organization. There are many tools and strategies that can help with the marketing aspect of processes improvement, hence, easing organizational change. Appropriate dissemination of information is key to the success of process improvement. Table 4 lists several successful methods.

Summary

Organizational change can be difficult. It is a matter of finding the right methods to use to make staff realize that the changes are rational, their perspective has been considered, and the changes work in their favor. To paraphrase Drucker, human nature does not resist change if it seems rational. We are, in fact, by nature ready to try new things. Looking at some seemingly diverse arenas, such as the ones addressed in this article, helps us control change. The theories and methods discussed help us understand what elements need to be considered when planning and monitoring a process improvement effort. All aspects of an organization must be considered when making changes.

These theories can be combined effectively to assist organizations in the organizational change effort that is key to the entire process improvement effort. The characters Ann and Mike are composites of people typical to many organizations; they want to work in a rational environment that is organized and exhibits controlled chaos rather than

Portals	Single integration point to disseminate information – knowledge board.
Business Intelligence	Virtually provides information on demand – access to a variety of data sources.
Focused Newsletters	Great way to disperse information – training and knowledge dissemination.
Bulletins	Encourage participation, announce events and successes, and disseminate information.
Posters	Advertise the effort, get exposure, keep everyone informed.
E-mails	Great for information dissemination – do not overuse or abuse – keep it light.
Staff Meeting Announcements	Make presentations, initiate efforts, show status, and advertise successes.
Polls	Determine if changes are accepted and disseminated.
Affiliation Formation	Social leaders, project managers, movers and shakers on projects or groups.
Keeping an Eye on the Future	If you do not keep a close eye on the flurry of activity in the technology market, you will get left behind as technology progresses.

Table 4: *Tools and Strategies for Effecting Organizational Change*

uncontrolled chaos. Chaos is everywhere, but we can control that chaos, and it can be very effective as opposed to nightmarish.◆

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Deb Jacobs has more than 30 years of experience in information technology including system/software engineering, project management, process improvement, and proposal development with a bachelor's degree in computer science. She has helped make many organizations more successful in development and management. Notable successes include leading a successful Capability Maturity Model (CMM) Level 3 effort in one year, successfully reengineering struggling projects, mentoring new managers, developing numerous technical papers, and gaining new business for companies through winning proposal development. Jacobs is the author of several published technical articles as well as the popular Process Improvement book *Accelerating Process Improvement Using Agile Techniques*. She has been a member of the Software Engineering Institute (SEI) CMM upgrade, CMM Integration℠ (CMMI). She is the former SPINOUT newsletter editor/originator, a former CERT® (Combined Environmental Reliability Test) Conference Chairperson, infotec Deputy Software Tracks Chair, SEI CMMI contributor, and is a member of the CROSSTALK Editorial Board

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