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Academy Sharing Knowledge

the NASA source for project management

Question:

"In this era of rapid change, all organizations, public and private, constantly struggle with challenging the status quo. That's why our stories this issue are devoted to the theme of challenging the status quo. For example, in government and private industry mindsets are changing from "systems are the key"to "people using these systems—and sometimes challenging them—are the key." The real dilemma for those caught in the maelstrom of this change is how do you change fast enough without losing the talented people who are willing to step out of the box and challenge the status quo. At the same time, while encouraging a fast and deep change, an organization must identify those elements of the culture, core competence, and systems, that SHOULD NOT change. **The question then is: how do you accomplish the first without changing the second?** "

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Leaders Who Challenge the Status Quo in this Issue of ASK by Todd Post

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and tell him what you think about this issue of ASK.

Mention status quo in a room full of project managers and you're likely to see a few people wincing. Note that no one yet is talking about a particular policy or regulation. It's just the word Status Quo itself and all that it connotes that turns the mood sour.

You don't need to be a linguist to understand the difference between denotation and connotation with a word like Status Quo in your vocabulary. Webster's defines Status Quo as "the existing state of affairs." Well, there's nothing pejorative about that. But why do so many of us hear something else? "An untenable existing state of affairs" sounds more like it...or "the sterile conditions around here"...or "the stifling reasons I don't enjoy my work anymore."

Perhaps you have your own definition.

In this issue of ASK, we consider the Status Quo and what it connotes for several exceptional project managers. Our articles address what it takes to challenge the Status Quo in the face of all sorts of pressures and constraints, bureaucracy and intransigence. We find several solutions, all tailored to the unique circumstances that our authors encountered as they smashed their way through the status quo bedrock in their respective organizations. Michael Jansen found inspiration in his youthful experiments with the junk collected by his parents and stored in the family's garage; Steven Gonzalez and his colleagues at NASA's Johnson Space Center looked to the future for their inspiration–about a hundred years; and Joan Salute turned inward to her core values. These are just some of the people and stories you'll find in this issue of ASK.

I suspect if you've ever been in a situation where you've wondered why you can't change things around you then you'll draw plenty of inspiration from these articles. Don't forget to send us your own examples of challenging the status quo, which we'll post in the next issue's Loop Section. Tell us why the Status Quo makes you shiver when you hear that word, or why not.

Enjoy the issue and thanks for being part of our readership.

Todd Post

I Would Prefer Not

by Dr. Edward Hoffmann

One of my favorite lines from literature is, "I would prefer not."

The words are spoken by a character in Herman Melville's short story "Bartleby the Scriven – A Story of Wall Street." In it, a productive office is tossed into turbulence based on one employee's simple but powerful response that he "prefers not" to do an assignme The employee, Bartleby, is a quiet, unassuming, steady worker, yet disagreeable to new tasks. His boss, the narrator of the story, tries to force Bartleby to change, but the latter simply won't. The narrator's actions, behaviors, considerations and strategies to alter Bartleby provide the framework of the story, a brilliant illumination on the challenge of teams, projects and leadership.

I wondered recently if I have a greater understanding of Bartleby today than when I first read the story in high school–years ago. What have I learned? How would I have reacted to Bartleby? Since Melville published the story in 1853, there have been numerous offerings on how to lead. Experts on the subject have offered all kinds of models, prescriptions, guidelines and advice. Books promise to offer anyone the straightforward secrets on how to motivate, guide, coach,persuade, inspire, and lead. Follow these six simple steps and voila...we're on the way to becoming just like Lincoln, Grant, Lee, Moses, or Attila the Hun.

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To answer my own questions, I turn to an early episode in my NASA career. Actually, it was the first day of work. I was going through security and waiting on a line to be fingerprinted. I heard laughter. When I reached the front of the line (the sharp reader will note based on my need to stand on a line for new employees that I am dating myself) I realized this happiness was coming from

the woman who was doing the fingerprinting. She was laughing and congratulating all new employees. I remember her energy and pride in working for NASA. She assured me that I was the luckiest person on earth. NASA was a great place to work--all her family and friends were so impressed!

The woman had a tank-full of high-octane energy and enthusiasm. For me this moment defined the critical essence of work - PASSION!

Having a passion for what you do is the critical ingredient in any successful work environment or task. High-energy people always look for ways to succeed. They brighten up a project and provide the necessary enthusiasm.

All of the other attributes of leadership are clearly important, but to me passion is the one essential. During our most recent Knowledge-Sharing meeting on the west coast, we discussed the importance of passion. Reflecting on the discussion, I'm reminded of Bartleby and realize that "preferring not to" is a condition lacking passion.

Leadership is about PASSION. It is about people who choose to do something because it is important to them. We all came to NASA with this passion. The secret to project leadership is how to keep the passion flowing.

A Tale of Two Change Agents

by Dr. Alex Laufer

Money does not fight for you!

Alan, a division head in a large R&D organization, together with Bob, a department head in this division, had worked intensively, and for a long time, to obtain a $20 million-dollar development budget. This was the largest development budget ever allocated in the organization, and it was granted to create a new research unit in the department headed by Bob.

The new research unit was supposed to make the R&D organization more competitive. For years the organization enjoyed little competition, and only in recent years has the situation changed. Half of the research unit's budget was allocated for building a new lab and purchasing new research equipment. The other half was supposed to cover the cost of hiring and maintaining the researchers for the first five years.

Two years later, and after $2 million had been spent on the project by Bob, the recently appointed new head of the organization, cancelled the plan for the new unit and transferred the balance of the budget to another division in the organization.

Why was this project cancelled? Surely, it was not due to shifting research priorities. The demand for research in the field of the proposed new unit had only increased during these two years.

In turned out that several senior researchers in the department headed by Bob were fiercely opposed to the project. Some of them went on record saying that the new unit would compete for resources with their respective research areas, and in the long run might even bring about a complete shut down of their areas of research.

How did Bob handle this opposition? He conducted endless meetings with the opponents. The meetings were lengthy and polite, but mostly unproductive. He was trying to gain the support of the great majority of the opponents. Alan, his boss, was not aware of the opposition within the department, and being busy with other new projects did not bother Bob for a long time.

"While the big budget clearly invigorated the opponents, it did not help the proponents."

Bob divided the project into two sub-projects – building the new lab and

purchasing equipment – and hired new personnel. He nominated two junior researchers to assist him in managing the two sub-projects, but he did not delegate authority and remained very active in leading both sub-projects.

Bob spent a lot of time trying to recruit researchers to the new unit. Though the salaries he offered were above the going rate, new researchers did not join. It turned out that they were very reluctant to join a department where several of the more prominent researchers voiced a strong opposition against the new unit. Since these candidates were in high demand all over, they could easily find other employers, and they clearly preferred a supportive research atmosphere to higher salaries.

Though Bob was very committed to the creation of the new unit,since he still had to run the existing department, his time for the new project was limited. At the end of the first year Alan found out that the project was virtually stuck. He asked Bob to nominate a senior researcher from the department, somebody without other administrative duties, to lead the project. Bob refused, and Alan, apparently still impressed by Bob's vital contribution in the early stages of securing this large development budget, did not press the issue.

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More precious time passed and the project failed to make any visible progress. When the new head of the organization took office, two years after the project was authorized,he conducted a quick inquiry. He found that Bob was very systematic in his recruiting effort, and while not even one new researcher was hired, Bob had already interviewed the entire pool of potential candidates. That is, the chances for recruiting quality candidates in the near future were virtually zero. Therefore, to make sure that additional money would not be wasted on additional research equipment, he terminated the project and transferred the money to three more promising departments in another division.

The inquiry found that the unprecedented huge budget amounted to a false perception of power and self-confidence. As a result Bob and Alan became complacent, failed to establish critical alliances, lost their sense of urgency, and did not push hard and fast enough to overcome opposition. The inquiry underscored the necessity of following through, i.e. implementation, and that it is impossible to move forward if you try to please everyone all the time. As the head of the organization concluded: "While the big budget clearly invigorated the opponents,

it did not help the proponents. Money can't serve as your change agent. It does not fight for you!"

"Go ahead and publish a cancelling ad"

At about the same time that Alan and Bob were conceiving and planning the creation of the new research unit, Alan was involved in another change. He was planning the creation of a program that would focus on attracting and employing excellent co-op students. While the organization had a well developed cooperative education program, for years there were talks within the division of establishing a program for attracting the best students. And for years this initiative was aborted again and again because the different departments within the division could not agree on the parameters of the proposed new program. This time, due to the fierce competition for quality new hires, Alan decided to create a new centralized unit to design and run the program.

Alan asked Judy to lead this co-op project. Judy, a young researcher who was recognized as an emerging star, held several meetings with the heads of the departments in the division. In principle, they all agreed to the project, but three months after project launch, Judy found herself exactly were she was at the onset. Judy submitted several different plans for consideration by the departments, but since the tradition was to reach a wide consensus, and no plan was embraced by all departments, nothing was approved. Moreover, since the departments did not trust the new central unit to treat them evenly, each one was worried that the "other department" would be treated more favorably with the allocation of the excellent co-ops.

Judy decided that she must act. She prepared a plan in which she attempted to best represent the needs of the various departments and submitted it to Alan for approval. Alan approved it and submitted it for approval to the head of the entire organization. When Judy heard from Alan that the head of the organization approved her plan, she published a big ad in the local newspapers. The ad described the highlights of the program,including the special benefits for the co-ops. Since she did not have money appropriated for the project, she charged the cost of the ad to her own research budget.

The next day Judy was summoned to the deputy head of finance. He scolded her, using the harshest language possible. Judy knew that by the book he was right. Though she had the consent of the head of the organization, she knew that officially to activate the program she needed approval of the heads of the departments and the entire forum of upper management, including the deputy head of finance.

"Everyone also knew that using the formal way for approval, the program would have never seen the light of day".

But she also knew that she was right. Everyone agreed that the organization badly needed the new program. Everyone also knew that using the formal way

"It appears the larger and older the organization, the greater the need and difficulty in challenging the status quo."

for approval, the program would have never seen the light of day. So she was ready to take the risk. Instead of backing off or apologizing she stood firm. Quietly, but firmly, she told the deputy head of finance: " You can go ahead and publish a new ad that will cancel my ad."

Two years later when Bob's plan was abolished and the $18 million was transferred to another division, Judy's new unit was thriving and other divisions were waiting in line to learn from her how to implement a similar program in their divisions.

In an era characterized by fierce competition and frequent change, all major projects, technological, business, and organizational, require a significant shift in thinking, beliefs, and behavior. Therefore, no project leader can be successful without the willingness to challenge the status quo. It appears the larger and older the organization, the greater the need and difficulty in challenging the status quo. The main lesson of these two tales is that the willingness and ability to challenge the status quo, despite the personal risks that it entails, is very often the most important factor in the success of a project.

Listening to the Voice Inside

by Joan Salute

Like most of us, I've had to think hard about what makes for a successful project manager. Haven't we all read, or written out for colleagues, lists of requirements? I bet we can recite them in our sleep. Project managers need the ability to:

· Plan
· Schedule
· Budget
· Monitor
· Control
· Etc., etc., etc.

I don't know about you but I have a hard time with these lists. Of course these abilities matter, but for me just one stands out as the defining characteristic of any good project manager, and this is one usually not included in the list or easily encapsulated in a single word. That characteristic is his or her willingness to challenge the conventional way of doing things.

This is something all good project managers do by nature, I think--what we're hardwired for, if you will. Look back over your own life and I bet you'll see

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that it is something you've been doing from a very early age. In school, we didn't confine ourselves to 'staying within the lines' even when our teachers judged this as disruptive, and perhaps even suggested we were behaving inappropriately.

As a project manager, I've been in situations where I've had to rethink the conventional ways of doing things. On the first hardware project I managed, for

instance, there were just five months to get from funding to flight. The pressure on us was tremendous, and, given the timeframe, made for a very high chinning bar. The project involved testing an ultra-high temperature ceramic material for use on reentry vehicles. If the project was successful,the results could lead to revolutionary changes in the design and protection of spacecraft. Not only was it a high profile mission for our team but also for the Center. At Ames we normally developed material and payloads and let other Centers fly them for us. This was our first chance to handle the entire flight experiment. That we were operating under such a tight timeline meant there was no room for error.

"It's true you have to choose your battles, but if you're not willing to fight you don't win any."

One of the biggest challenges to our success turned out to be the machining of some specialty materials. We had a two-week period scheduled for this. Everything seemed to be going well at first. We located a vendor on the East Coast,and their computers read the files we sent. After five days the vendor called to say the output was not coming out like we had hoped.

Roaring along until then, the team's morale took a nosedive as attitudes from the top down fell flat. Once the shock wore off it was apparent that if something didn't happen quickly we'd be paralyzed. No one had faith we could turn it around. Our Chief Engineer was saying things like, "We gave it our best shot," as if he was admitting we should throw in the towel.

I needed to make something happen before things got completely out of my control. When the leaders announce they are giving up, the rest of the team has little incentive to press on. "We gave it our best,but it just couldn't be done" might be the dignified way to say you're resigning yourself to defeat, the status quo response, but I had no intention of giving up yet. I was already thinking how best to engineer our recovery.

I adopted the attitude that we were going to find someone else to machine the materials, and it would get done on time. It was going to be a huge test of my leadership skills. The timeline we'd been given for the project was enough of a test–now I had to find time to recover in a schedule designed with no room for error. Despite the skeptical looks I got,I forged a plan and proceeded as if this was business as usual.

Business as usual? Well, hardly. We started out by going through the phone book. Three of us worked the phones and called every vendor in the book. Nineteen of twenty had no idea what we were talking about. When we mentioned the name of the material, they either were not willing to take the risk or the timeline was too short. The one out of the twenty who did recognize the material would say something like, "You know, I attended a conference awhile back where there was someone who worked with that type of material," and that led to another twenty calls.

After a long phone trail, we finally found two companies, each of whom could do part of the job. The end of the story is, we got the materials machined

and met our schedule.

I'm proud that the team got back on track and we accomplished our goal. For that to happen, it required me to deliver on what I said I could do, which was to deliver to a tight schedule. This is what served as the impetus to get the others back on track. Often times challenging the status quo is about simply believing in oneself.

"Remaining focused on the core requirements is critical to meeting costs and schedule."

To make things happen you also have to fight sometimes for what you believe in. Again, think back to when you were a kid. Remember how sometimes you got one of those teachers who respected you for your individuality and who appreciated your commitment to sticking to your core values.

I've been in situations that tested my core values. On another project I was leading, we had what looked like plenty of time from funding to flight. It was a straightforward mission. All we intended was to launch a vehicle modified to include experimental materials, study it as it reentered the atmosphere, and then recover it. The Pentagon informed us that because our mission "appeared" to conflict with the Strategic Arms Reduction Treaty (START), we may not be able to recover our vehicle. We would need explicit Pentagon approval to recover our vehicle, but their expectation was that approval would be granted. A two-month approval process dragged on for eleven months without approval or denial. We proceeded to design the flight as if we'd be allowed to recover the vehicle.

They finally approved recovery of the vehicle, but stipulated that our data must remain classified. You can probably imagine my frustration. After waiting this long for the first decision, I had to decide was it worth it to fight this decision. Whereas some project managers might have gotten fed up and accepted the ruling, the status quo, I dug in my heels and said no, I've got stamina to keep going and I'm going to fight this one. It was a NASA flight experiment for the Aerospace Industry and for NASA–we needed this data. I estimated the value of the mission would drop by 80 percent if the data were classified.

It's true you have to choose your battles, but if you're not willing to fight you don't win any. It was a risky strategy, perhaps a bit bold, but our team truly believed the data met the requirements for non-restricted distribution. As it turned out, we won them over.

Everyone has to adopt his or her own theme song. For me on this project, it was one that was popular on the radio at the time. The refrain went, "I get knocked down,but I get up again." It just seemed to fit how I felt on this mission. They tried to knock me down, but I kept coming back. You need to adopt your own fight song. Make it one you draw strength from. Where to find that strength? Start by looking at your core values.

As it was, my song played on like a broken record. On this same mission I got knocked down again. Another national lab approached us with an offer to develop and provide GPS equipment to track our reentry. They had been looking for funding for a long time to develop their GPS equipment. There was pressure

on me from the Air Force to accept the offer. The Air Force had helped us out in the past,and now wanted this from us. No one could believe it when I turned the offer down. The pressure to accept came down even heavier when the other lab offered us the equipment for a greatly reduced price. Again, I said no.

In cases like this, knowing what NOT to do can be as important as knowing what to do. I haven't once regretted the decision I made in this case. It was uncomfortable to be the 'bad guy' in this instance, but I said no because I felt it would have diverted our personnel resources and distracted us from our mission. Strong leadership requires making unpopular decisions sometimes. The status quo thing to do would have been to try and keep everyone happy, but I drew a straight line in my mind as to what I saw was necessary to achieve a successful mission and never wavered, and we did have a successful mission, I believe, because we remained focused. Remaining focused on the core requirements is critical to meeting costs and schedule.

You can't always do what people want you to and expect to be loyal to your own core values. There will always be somebody with a competing interest there to challenge you on a judgment call. You've got to decide who you want calling the shots for you, yourself or someone else. That's why I believe challenging the status quo means challenging yourself to 'Do the right thing.' When you know what's right, you only need listen to yourself.

"You've got to decide who you want calling the shots, yourself or someone else."

LESSONS LEARNED

1. A characteristic of any good project manager is his or her willingness to challenge the conventional way of doing things.

2. To make things happen you also have to fight sometimes for what you believe in.

3. Knowing what NOT to do can be as important as knowing what to do.

It's All About Passion

by Steven A. Gonzalez

Antonio Stradivari, creator of the great Stradivarius violin, is widely regarded as one of the world's master craftsmen. Nearly 300 years after his death the village of Cremona in Italy where Stradivari lived and worked is still imbued with his spirit. Violinmakers from all over the world continue to visit there to pay homage to his genius.

I learned of this, ironically, at a management conference four years ago. We were shown a video about a present day American violinmaker who had made his own pilgrimage to Cremona. To visit the home of the greatest of all violinmakers, he believed, was the best possible way to experience "true passion" for his craft.

I mention this story because it signified a turning point in my life. I had been with NASA for nine years when I attended the conference and saw this video. It occurred to me afterwards that I too longed to feel passionate about my work again.

At the start of my NASA career I had no shortage of passion. I believed I was at the center of the most amazing technological advances in science. The Command and Control Center at the Johnson Space Center–could there be a more exciting and glamorous assignment for a young engineer who'd spent his boyhood fascinated by space travel and the Apollo missions?

NASA was an amazing place then, brimming with excitement and passion, teeming with people who believed there was no end to where their creative energies could take them. But something changed in me over those nine years. I cannot put my finger on a single event, but I no longer felt the passion that I once did.

"I cannot put my finger on a single event, but I no longer felt the passion I once did."

When I returned home from the conference, I stewed about my feeling for a couple of weeks. I told my wife I've got to turn things around. I said I would give myself a year, and if nothing changed I was going to leave NASA. I was too young and had too much energy to allow my spirit to languish in a place I no longer felt passionate about.

Looking around me, I saw a different NASA than the place I had come to nine years ago. NASA was not immune to the effects of government downsizing,

and the team that worked in the development of the Mission Control Center (MCC) had been reduced dramatically. As the emphasis for privatization and consolidated government contracts grew, we were struggling to understand what was happenening at NASA. To many of us, it seemed like we no longer had the technical skills to validate that what the contractors were telling us was true. We were relying on their expertise. What was our future? Did we even have a future at NASA? Rather than rocket scientists, I felt we were more rocket contract managers.

Weeks passed and I agonized over what to do. Engineers know how to talk about projects and budgets, but when the subject turns to how we feel, well, passion isn't the kind of word you hear used around NASA very often. Every time I considered approaching a colleague, I worried I would be seen as a complainer, or worse, laughed at. Finally I sent an email to the other 19 members of the team and asked point blank, "Do you still feel passionate about your work?"

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I dreaded opening my email after that, but it turned out to be better than I ever could have hoped. The response was an overwhelming expression of solidarity. Yes, let's talk about it, everyone said. And so we did.

At our first meeting we shared with each other why we had come to NASA, the dreams we had when we walked through the door our first day however many years ago that might be. Our reasons for being here were universal. Everyone believed we'd be on Mars by now, or we'd be colonizing the moon. The farthest reaches of the galaxy would forever be expanding as long as we had the imagination to see a way there. It was tremendously empowering for everyone, and for me it was an affirmation of everything I believed I still could feel.

"Rather than rocket scientists, I felt we were more rocket contract managers."

All of us wanted to try and recapture that sense of excitement we once had. We began by asking each other to define his or her own vision. We put these on a white board and attempted to synthesize them into one unified, collective vision that could work for us all.

We decided to go beyond the near term, so the vision we plotted had to take us beyond the next decade, beyond the next two decades even. We selected the

year 2076 as a target date, the tercentenary, a date that symbolized another watershed in our nation's coming of age, one that was so far in the future that it could continue to fuel our dreams for the rest of our careers.

Do we sound crazy? Like kids? Perhaps we were, but not one of the adults on our team doubted our seriousness or believed we lacked the resolve to go the distance.

Next, we identified everyone's role in bringing the vision to life. In essence, what we hoped to accomplish was no less than a complete paradigm shift in NASA's current operations strategy for exploring space. Presently we send small teams into space with a large support team on the ground. By 2076 we believed we could put large numbers of people in space and take Command and Control with them. Our mission, as we saw it, was to come up with a plan to achieve the infrastructure and technology that would make this vision a reality.

"Before we knew it, companies like CISCO, Xiotech, Silicon Graphics and Sun wanted to partner with us."

Once we knew what we wanted to accomplish, the vision began to take shape as a lab, the Qualification and Utilization for Electronics Systems Technology (QUEST) lab. The symbolism of the word QUEST was important. It signified that we were striving to go beyond what we were doing, what we could do, beyond the Space Station, beyond inhabiting Mars, all the way to whatever new technologies could emerge by the year 2076.

The bitter reality of it all was that there was no money for this. We went to management and explained our vision, and they said it sounds great but we've got Station and Shuttle challenges, and right now we can't fund this. The reality, and we were not naive about it, was that we were also still expected to be full-time contract managers.

This did not deter us or force us to scale back our vision in any way. We reckoned we just had to find alternative sources of funding. We determined the best way to do this was by seeking partnerships with private industry. We knew we had an attractive offer to make to industry. By presenting them with a chance to be in NASA's Mission Control Center, we knew they had a strong incentive for taking us seriously.

It worked. Before we knew it, companies like CISCO, Xiotech, Silicon Graphics and Sun wanted to partner with us. In short order we obtained over a million dollars worth of equipment in technology transfer agreements. Suddenly, our team was working with the latest and best technology, and suddenly it was like being a young starry-eyed engineer again, pushing the envelope, learning new things and getting core competencies back.

Four years have passed since I sent out that email. As you can see, I didn't leave NASA. QUEST has provided me, as well as many of my colleagues, with an outlet for our dreams and creativity. We take seriously the vision we have plotted and are working together to make it a reality. Those readers who feel an affinity with the struggles our group has undergone, ask yourselves where are you right

now regarding your own passion for your work? Perhaps it's on you to take the risk and find others in your office or Center who will join you in your quest. If you do choose to go this road, and there is no question it is the road less traveled, just make sure the vision you forge with your colleagues is a democratic one, that it embraces everyone's vision. I wish you the best on your journey.

LESSONS LEARNED

1. Visionary leaders are willing to take the initiative to render a dream into reality.

2. Once you identify where you are regarding your passion for your work, take risks in finding others who will join you on your own QUEST.

3. In this era of scarce resources, effective partnerships can take you a long way.

Reforming a Mindset

by Roy Malone

Roy Malone
serves as the Director of the Logistics Services Department at Marshall Space Flight Center (MSFC). His responsibilities include planning and directing a program of logistics, technical, and institutional support to the research, development, and program management activities of MSFC. Mr. Malone joined the MSFC in 1994 from PRC, Inc., where he supported MSFC as a Senior Quality Engineer on the S&MA support contract. Mr. Malone is a graduate of the Georgia Institute of Technology where he received a Bachelor's degree in Electrical Engineering.

My new job looked great on paper, head of Logistics Services at Marshall Space Flight Center, but I had to wonder when I arrived did they expect me to manage an office or perform miracle cures?

Fortunately, I had great support from upper management for my reforms. My new boss was new also and had warned me about the effort required to turn things around. I needed her support because what I found on close examination was not encouraging. Most disturbing to me was the way people were being stretched beyond their limits. Many people were doing things in areas where they hadn't been trained. Not surprisingly, they were unhappy. Morale was so low I felt like I needed a life support system to keep it from expiring altogether.

That was only a routine examination. Cut inside and I discovered an organization damaged by years of broken processes and neglect. A number of procedures hadn't been changed since 1989. Just imagine a property pass system in today's world that doesn't provide for the long-term loan of laptop computers. Maybe that was okay in 1989, when few laptops were going in and out of the Center, but in 1998 you're a long way from working faster, better, cheaper when people can't get their mobile equipment in and out of their offices without obtaining a new property pass every quarter.

> **"My thinking all along has been to involve everyone in the reforms, and that includes the contractors as well as the civil servants."**

The first step was going to be revitalizing my coworkers. There was no way I could reform this office by myself. I had to convince them that the status quo was unacceptable, which shouldn't be hard, but the tough part would be getting them to see WE could change it--and not just because it was good for the image of the Center. This would make everyone's life better. Complaints would decrease, the processes would run smoother, and,most important of all,their jobs would be easier.

"Together, we're going to change the way people take care of their property at Marshall," I declared, sounding the battle cry. By saying this with conviction, I got enough people to take me seriously and the others were at least willing to fol-

low along.

What I prescribed was a forward-looking approach. I said it doesn't matter what happened before, nor does it matter who was to blame. To emphasize that we were starting out fresh, I did something they had never done before at Marshall. I implemented a Departmental Employee-of-the-Quarter program for people to see that doing good work had its own reward.

Although MSFC did not have a formal Employee of the Quarter program, I was able to enact the program informally with the approval of my management. We did it the McDonald's way, putting a plaque up in the office and adding the names to it quarterly. People also got their picture on the wall, a certificate, and lunch on me. To guarantee it would be taken seriously, we used an employee-nomination process. It was the only way to reinforce that this was "our" effort,and the result was it was embraced by everyone.

Getting extraordinary things done in an organization is hard work. Leaders have to believe they can make a difference, but they also have to enlist others' support,and they have to recognize the contributions of these people or they will never motivate them to perform.

Our Employee-of-the-Quarter program was so successful I expanded it to include contractors. Now we have a Contractor-of-the-Quarter program too. My thinking all along has been to involve everyone in the reforms, and that includes the contractors as well as the civil servants.

In this same way, we introduced employee satisfaction surveys. We started with the civil servants and are now expanding this program to include contractors as well. The best way to get anyone to care about a home or an office or an agency is to create a sense of ownership. I felt we could do that by allowing people the opportunity to identify how to improve things at the Center. Again,it was important to make clear that the vision of what the Center could be was theirs as well as management's.

As the leader in this reform effort, I knew it was critical that I set the tone in the office. Enthusiasm rubs off, after all. First thing every day I stopped by people's offices to say good morning. At first many were taken aback. What's wrong? Had they done something they should be reprimanded for? That was the sort of attitude that existed before I got there. People started to loosen up once it became clear that I was just coming around to say hello, that's all.

I believe a key factor in leading any reform effort is getting people to trust that you care about them. As people's comfort level increased, we were able to use these visits to address office issues they otherwise wouldn't have brought up. It was important first to let them know it was safe to do this. It's hard to imagine anyone feeling safe when the only time the boss comes to visit them is to tell them what they're doing wrong.

One of the things I was concerned about when I stepped into this job was that people in the office were being asked to perform their duties without adequate resources. Since coming to NASA I've watched as people are thrown into the breach. They're usually successful at what they do because they're intelligent,

talented people. But that doesn't make it right. You build a team by helping each other out, and that means running to someone's defense when they need help. It pays big dividends in the long run because then you've got everyone helping each other, and that is the glue that holds the team together. Once that attitude takes hold, nobody sees him or herself isolated any longer when problems arise.

I have many examples of what I mean by people required to work with inadequate resources. For example, when I came on board with Logistics Services, some folks in the office were still working on 386s–at NASA! I heard about a woman on my floor assigned to work on some of our databases with only a 486, while I had a Pentium. Who needed the better computer, her or me? I immediately requested that the computers be swapped. It's far more important to me that the people I work with have the tools they need to do their jobs than that I have the biggest, baddest machine on the floor.

"It's hard to imagine anyone feeling safe when the only time the boss comes to visit them is to tell them what they're doing wrong."

One thing we felt we had to do center-wide was train people on what property management was all about. But the last thing we wanted was to drag everyone into an auditorium for a two-hour lecture. People were busy–they had projects, sometimes multiple projects, going on. To make the training convenient for them, we built a web-based program. I helped design it myself, an interactive program that quizzed and evaluated them as they worked their way through it. People appreciated this. The comments we got back said it was an excellent way to conduct a training, and they suggested other programs use this approach.

This touches on one of our biggest reforms of all, getting folks in the office to put customer service on their agenda. When I first came on board, there was little to no customer focus. One way I tried to put it on the agenda was by telling "Sea Stories." These were just stories I brought up to try and get others to see that exceeding customer expectations was something in itself worth striving for. The stories could be anything. Usually, they were just things that happened to me during the day or over the weekend. For example, I bought windshield wiper blades from a guy at the Auto Store. He asked me where my car was parked and I pointed to it in the parking lot. He took the blades out to the car, popped out the old ones, put the new ones in, and then while we were standing out there talking, he asked if there was anything else I needed. He didn't have to go out into the parking lot and put on the new blades, but he was focused on exceeding my expectations and making sure I was a satisfied customer. Where do you think I'm going next time I need something for my car?

Stories like this I hoped would inspire people to do something extra for people. These could be simple things, like sounding extra friendly when they answered the phone, building cordial relationships with the people in other parts of the Center, treating our contractors as team members too. The attention people pay to the customer is probably the most visible difference in how our office operates now from when I started. This customer satisfaction emphasis was rein-

forced by sharing comments from pleased customers at our monthly staff meetings. One employee who adopted this new practice was almost always recognized. During the meetings I would say "and here is an email from a happy customer who wrote, Mr.–," and I would pause and the entire group would say his name. This encouraged others to take pride in being recognized for taking care of their customers.

We've made lots of changes and we've got lots of people to agree the difference has been worth the effort. Many of those old outdated procedures I referred to earlier are in the process of being reformed. During one major process improvement effort, we used facilitated process improvement sessions with employees, contractors and customers to identify over 500 process improvement opportunities in a 16-week span. We have already implemented more than 250 of them.

"The attention people pay to the customer is probably the most visible difference in how our office operates now from when I started."

The overarching challenge in reforming an entire office is changing the mindset. You get there slowly, but it can happen. I think our office demonstrates this. To challenge the status quo, you have to inspire a shared vision. Once you do this, enable others to act, and never cease to model the way yourself. Do this from the heart and amazing things can happen.

LESSONS LEARNED

1. Successful change comes from employing a complementary set of principles: Challenge the Process, Inspire a Shared Vision, Enable Others to Act, Model the Way, and Encourage the Heart. These principles derive from *The Leadership Challenge: How to Keep Getting Extraordinary Things Done in Organizations*, by James M. Kouzes and Barry Z. Posner.

2. Actions speak louder than words. People will draw inspiration from seeing you 'walk' what you 'talk' and thereby follow the path you lead.

3. Stories provide concrete examples of the values you want to instill. Be sure to draw from other areas of life besides just what's going on at the office.

4. Let people know their work is appreciated by recognizing and rewarding those who make a difference.

Garage-Style Engineering

by Michael C. Jansen

Judging by my conversations with peers in the industry, it is striking how many engineers grew into their professions by tinkering with junk in their families' garages. Objects of surprising simplicity and utility were created by eager, inventive young minds, from the stuff stored by can't-let-it-go-to-waste parents. Along the way we learned, and developed a passion for engineering. And it was no big loss if a "junk" contraption didn't work...

Where does that creative, pioneering, seat-of-the-pants engineer in us go as we mature?

Only rarely, it seems, does this approach survive the "real world." For example, several years ago one of the engineers in my organization had an interesting idea in reaction to a problem he heard about. Several of the International Space Station (ISS) technical communities needed to collect various types of on-orbit data to validate their respective math models. The necessary instrumentation had been eliminated from the ISS Program during previous budget-cutting exercises. To reinstate even a tiny fraction of the originally requested instrumentation at this late stage of the design cycle would be cost-prohibitive.

Prompted by the Loads and Dynamics community, the ISS Prime contractor estimated alone the integration costs to exceed $24 million for a greatly scaled back complement of accelerometers. Although everyone involved cringed at the cost estimate, they knew that the traditional approach of routing wiring, scarring the existing hardware designs for instrument installations, and redoing the myriad drawings and interface documents could indeed be that expensive. Everyone, that is, save my colleague, who wondered why nobody seemed to be considering the use of wireless technology. He knew of a small local company that specialized in wireless applications, and which had developed some spread-spectrum radio technology under a NASA Small Business Innovative Research grant. They had produced a low-cost transceiver for him that functioned very well during a recent Shuttle flight experiment.

"We were assured that, despite our budget constraints, almost anything was possible."

His idea was simple: incorporate similar technology into small, instrumented boxes that could be velcroed wherever needed on the ISS with a minimum of integration effort. If the boxes were made inexpensive enough,they could be dis-

posable, which would allow a non-redundant system design. If a box failed, simply pull it off and replace it, or cluster several of them in each desired location and remotely activate the redundant units in turn upon failure of the active unit. The possibilities were exciting indeed.

I was asked to lead the exploratory project to determine the feasibility of this approach, then build a prototype system, conduct a flight experiment, and, if appropriate, convince the ISS Program to approve the addition of a multipurpose instrumentation system based on this concept. The problem was that discretionary funds were exceedingly tight that year and my organization could only afford a shoestring budget–maybe $50 thousand if I was lucky. It was an impossible undertaking in a conventional sense; one of the instruments we were interested in cost $23 thousand per unit!

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I met with the wireless company's president,a gentleman with an exuberant, entrepreneurial attitude, who served to energize my "team" (a solitary veteran of the previous flight experiment) and me. We were assured that, despite our budget constraints, almost anything was possible. Were it not for this company's demonstrated ability to follow through on its claims, I would have been highly skeptical.

Instead, I remembered a friend's experience. Faced with a six-figure cost for a wave facility test to determine which of several ISS crew-return-capsule designs would be most seaworthy, he built his own wave tank with a few sheets of plywood, foam rubber, some plastic sheeting, and a scavenged wash-machine motor and mechanism. For a couple hundred dollars, he narrowed the design options to two.

I shifted mental gears and adopted a more can-do attitude.

Hence, our project quickly took on a garage-style feel. Since size minimization was critical to our design concept, we scoured the vendor ranks until we found one that made automobile airbag accelerometers the size of pencil erasers. By modifying the signal processing, the mechanism could be adapted to measure the much lower acceleration levels we were interested in. One problem was solved–for $50 a pop.

Similarly, we bought and modified other items until, after a scant three months, we had two working prototype wireless instrument boxes the size of a

double-thick pack of cigarettes, complete with accelerometers in three axes, pressure transducers, radiometers, solar-power rechargeable battery cells, radio transceivers, and data processors. Included in our hardware set was a similar-sized transceiver to plug into a standard flight laptop computer from which we controlled the system. All this came to under $40 thousand, including a preliminary round of vibration and thermal-vacuum testing.

The various managers to whom we demonstrated our prototype marveled at the real-time, dual display of acceleration, pressure, heat flux, and temperature data marching across the laptop screen almost as much as at the price tag. A second generation of smaller production units was estimated to cost $1500 per unit, and a comprehensive ISS instrumentation system based on this technology was priced at an order of magnitude less than the $24 million the ISS Program had choked on previously. We were strongly encouraged to proceed with a flight experiment.

"We had hardware but no money; they had money but no hardware."

We developed the blueprints for a flight experiment that would test the system by measuring the effects of the Shuttle's reaction control jets as they plumed the Russian space station Mir. Upon conducting initial negotiations with our Russian counterparts, and with the local Extravehicular Activity Office that would have to design the space-walk activity necessary to install our hardware on Mir, I developed a schedule and budget for the flight experiment and charged the hill.

I soon found that the ISS Program was willing to accept my proposal for a risk mitigation experiment to be flown on an upcoming Shuttle-Mir mission but that I would have to bring my own funding. Here was the Catch 22: the ISS Program was unwilling to fund the development of a system it had no official requirement for, and it was unwilling to acknowledge on-orbit instrumentation as being a requirement until a low-cost implementation was available.

Upon looking for solutions across the Agency, I learned of a project with similar goals as ours at another NASA center. They wanted to develop a wireless instrument system to measure structural dynamics and had secured science funding to develop such a system, which they wanted to test on the ISS. It was the perfect match: We had hardware but no money; they had money but no hardware. The other project's manager eagerly accepted my proposal to combine our projects.

Upon gaining approval for this combined risk mitigation experiment, I left it to accept another assignment, taking with me a new attitude inspired by my experience with garage-style engineering. Our original project,after several incarnations, spawned several wireless instrumentation projects that now support the Shuttle and ISS Programs. All of them are producing more versatile and easily integrated flight instrumentation hardware than conventional aerospace methods allow. They're beating convention with shorter development times and dra-

matically lower development and integration costs as well.

Perhaps we should do more of our work in the garage.

LESSONS LEARNED

1. It pays to remember the let's-try-it pioneer attitude that drew us to our profession and, likely, to our employer.

2. If a picture is worth a thousand words, a prototype is worth a million; prototype early and often not only to mitigate risk, but to help management understand the true feasibility/potential of your concept. It's hard not to get interested in an idea when one sees it embodied in a functional piece of hardware!

3. The use of Commercial Off-the-Shelf (COTS) components, combined with an informal quality control/configuration-management environment, enables Faster-Better-Cheaper prototyping.

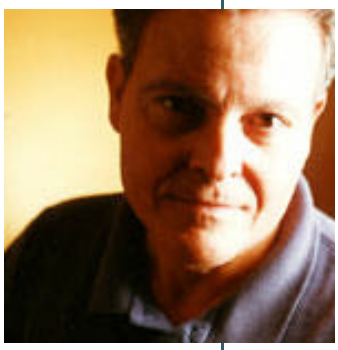
Open the Door and They Will Come

by Hector Delgado

How do you reallocate funds without people feeling like you're taking away "their money"? If the money is being used efficiently, reallocation is a moot point; but if efficiency is not the case in your organization, you've got a corrosive situation that must be addressed.

At the Kennedy Space Center we needed to find a process by which all the sacred cows could be identified. Given the legacy of the organization,it was clear that one possible solution would be to adopt an "Inclusion Solution" to the process. That is, have our customers, developers, and contractors included in the process, so that they would feel this was not just an exercise to take away "their money."

I attempted to do just that in 1999 when I transferred to the Engineering Development Directorate at KSC. I was asked to head the Development Project office. I viewed it as an opportunity to shake up the system--because, in my view, this was a system badly in need of shaking up.



Hector Delgado
is Division Chief of Process Tools and Techniques in the Safety, Health and Independent Assessment Directorate. He has received many honors and awards including the Exceptional Service medal, Silver Snoopy Award and various NASA Achievement Awards. In 1998, Mr. Delgado wasselected for the NASA Senior Executive Service (SES) Developmental program and successfully obtained SES certification in 2000. Mr. Delgado has an Master of Science in Engineering Management from the University of Central Florida and has completed the Harvard University Executive Fellow program.

Here's what I'm getting at. Picture this: KSC's career engineer returns home from work at the end of the day and is greeted by a spouse who asks, 'So, Honey, what did you do today?' The engineer replies, 'Oh, it was just like any other day. I watched.'

Watching, I'm afraid, has become all too commonplace at KSC. It seems like most of our career engineers are getting paid to watch contractors do the hands-on engineering work; what at one time we were doing in our own labs, we now are delegating to people outside the Agency. Sure we provide insight,and I don't have any problem with that,but the future for the career engineer at KSC did not

look very bright in 1999. Many were asking themselves, "Am I going to become obsolete?"

The situation had to change because for an institution to survive and flourish, it has to use the talent within (otherwise you threaten the very existence of the institution). There was plenty of talented NASA people whose boredom and frustration would eventually undermine the promise of what NASA originally meant: exciting, cutting edge, hands-on engineering work. To lose the talent within an institution like NASA is in essence to kill it. What kind of institutions do you have when there is no institutional memory? Facilities remain standing, but the lifeblood inside has been pumped dry.

In my new job, therefore, I considered it the first order of business to find ways to come up with funding for new development activities for the career engineers at KSC. Historically, the Engineering Technology Base (ETB) budget was used for operational support of core capabilities as well as program support. I wanted to use my position to put new projects back in the hands of our civil servants. I believe the opportunity to branch out into other projects and research is upon us, especially as the shuttle program relinquishes more of the day-to-day processing responsibility to the private sector, but it is up to us to seize this opportunity while it lasts. To do so would require looking at all of our current projects and deciding which ones to jettison to make room for reinvestment.

"Over several months, we dismantled and reassembled the entire budget."

My strategy was simple. I needed to convey that diversification and re-investment did not mean taking away "their money." Instead, I wanted people to see that this was a realignment of "our" resources, and this process belonged to all. Getting them to see this was going to be the tough part. Naturally, you have to use dialogue--which isn't easy, because remember, engineers want solutions, not talk.

My team consisted of myself and two other KSC veterans, David Collins and Oscar Toledo. We started by being there all the time. And we were, ladies and gentleman, until late at night, every night. You've heard the expression "Build it and they will come." In our case it was "Open the door and they will come."

"You can't reallocate this money--the project will come to a standstill, we won't be able to launch. And besides, it's MY money!"

We heard them out to the bitter end. At every opportunity, we explained why we were doing this. Besides the fact that we were all going to lose our jobs if we didn't change, we talked about realigning with our customers' needs, developing technology to support present and future needs, providing more opportunities for civil servants to participate in hands-on development activities. We talked and we talked until we felt like we had these lines memorized and were saying them in our sleep.

Another important part of the strategy was to put together a team that would look at how all project money was being spent at the center. The team consisted of division chiefs, project managers, customers, and contractors. We reviewed all

of the projects and found that a number of them were inactive. The projects were cancelled, or the project managers were given the chance to reclaim them. Few did, incidentally.

The process progressed to a line-by-line review of every project, every budget, and every procurement at the center. It sounds time consuming, and it is, but this was absolutely necessary. We brought together the customer, the developer, and, where applicable, the contractor to have an open and meaningful discussion about every project, and gave those with a vital stake in that project a chance to defend it.

"When you challenge people to change, sometimes the only reaction you get is a steadfast resistance to change."

Over several months, we dismantled and reassembled the entire budget. In order to obtain final buy-in from everyone, we held a project review with customers, developers and contractors. We scheduled the meeting at the Beach House–a mini-conference center at KSC used by senior management for retreats--to make sure that everyone was feeling good and loose before the fur started flying.

It wasn't nearly that bad,however. In fact,It was fun,it was stimulating, and in the end there were no broken bones or bloody noses.

Together, we identified ten technical product areas for investment and partnering with different programs and private industry. The "my money" attitude had magically transformed into "our money." And "our money" resulted in a development budget of $2.2 million in new investments in applied research and an additional $1 million in laboratory capital.

By creating a process that was driven by inclusion, open dialogue and clearly defined goals, the team realized an outcome that managed to overcome deep entrenched norms and suspicion. We had to go about it like this because we were challenging years of tradition, radicalizing a "business-as-usual" mentality.

Not everyone at KSC was enamored of our work. A significant number of people at the Center couldn't wait for me to find another job. When you challenge people to change, sometimes the only reaction you get is a steadfast resistance to change. But let's not leave off like this–for that's only one reading. The majority of people at our Center, I believe, are much happier, prouder, and feeling good about their future. At KSC we now watch a lot less and do a good deal more of the work we came here for in the first place. For those of us at KSC who prefer to read the story this way, sharing risk, responsibilities and ownership has been a tremendous success.

LESSONS LEARNED

1. Persistence pays off--if you are not willing to go ALL the way, you better not start.

2. Be inclusive, even if it takes more time. People will lower their defenses when they know they are being heard.

3. Put together a team to lead the change. The entire team must understand the situation and be able to articulate a unified message.

Four Ways I Battle The Untenable Status Quo

by W. Scott Cameron

W. Scott Cameron
is Capital Systems Manager for the Food & Beverage Global Business Unit of Procter & Gamble. He has been managing capital projects and mentoring other capital management practitioners for the past 20 years at Procter & Gamble within its Beauty Care, Health Care, Food & Beverage, and Fabric & Home Care Businesses.

1. A Time to Whine

As I mentor/coach Project Managers (PMs) and others, I have established a 10-minute maximum whining limit for our meetings. When the 10 minutes are up, the person has a decision to make–either say "Thanks, that helped me get a lot of things off my chest," or start to create a proposal on how to change the situation that is causing the problem.

This sounds cut and dried, but the 10-minute rule has proved very helpful to me. I can only take so much whining before I mentally shut down and begin to ignore what a person is telling me. I meet with 3-5 people daily; thus, I am still getting more than the recommended daily dosage of whining. Over time, the people I meet with have begun to understand the 10-minute rule is an effective one. It provides them with either a defined "venting" space or an opportunity to formulate a proposal to change the status quo.

> "I can only take so much whining before I mentally shut down and begin to ignore what a person is telling me."

2. Change Things You Can Control

The balance between time spent at work and at home is a recurring topic in my 1:1 meetings. Recently, a project manager (PM) complained he couldn't keep up with his e-mail/paper work because of all the interruptions he has in the office. After 10 minutes, I asked him what would it take for him to better manage this situation. He felt working at home and coming to the office later in the morning would improve this situation. I asked what was stopping him from doing this. He indicated he always came to work at 7 a.m. and would feel funny staying home as his co-workers would see he wasn't in his office. After thinking about this, he realized it was his routine keeping him from alleviating this situation. Thus, he proposed to change his work routine. Now he uses uninterrupted time at home to manage his workload. This was no small feat, as changing a personal routine is hard, but if it accomplishes what you want it is worth it.

3. Seek Ways to Use Innovation to Your Advantage

There are many tasks to which you can apply your energies to effectively change the status quo at work and in your personal life. There are only 24 hours a day, 7 days a week, and 365 days a year. Thus, you need to pick the items you want to change in your personal and work life carefully.

I have always believed it best to strike a balance between my work and my personal life. To put too much into one and not enough into the other always leaves me feeling unsatisfied with myself at the core. At this stage of my life and career, you would expect I would have it all worked out by now. Not so! To achieve the balance I require, I've found I must constantly tinker with the scales.

Here is an example of how I used an innovative solution to help me at a time I felt "unbalanced." During portions of my career I have traveled in excess of 80 percent of the time on business. I don't dislike travel, but there was a time when I felt a desire to minimize it. I thought it was killing my personal life, so I considered the alternatives.

One of my bi-weekly trips then was to Phoenix for project reviews. This was before the days of videoconferences and web cams--but after the telegraph was invented. I spent 3 or 4 days a month traveling to and from Phoenix and sitting in project reviews. I had to change this and proposed a different communication vehicle to the person I was working with. I proposed we invest the money the project spent on my travel to buy a video camera. He could then videotape the site and the process-and-packing construction areas we normally toured before our meetings and send me the tape. I'd review the tape in my office, and then we would conduct a conference call and accomplish in less than four hours what normally took 3 or 4 days per month of travel. It was a success and I felt satisfied, both at home and at the office.

"I have always believed it best to strike a balance between my work and my personal life."

4. Understand the difference between Status Quo and Folklore

Procter & Gamble, in my opinion, has a very robust way of obtaining project funding. In a nutshell, you write a proposal stating the business needs/benefits and its financial impact,and then you gain your hierarchy's approval or rejection. Many PMs complain it is too hard to obtain project funding. When asked why they feel this way, they eventually admit they do not understand the funding process. Their bosses also do not always understand this process but are generally willing to give the PM their personal experience (folklore), saying something like "You can't do that because I've never done it that way!"

I try to have people understand what the status quo really is versus what others think it is (folklore). Once you understand what the status quo is, you are in far better position to either change it or whine about it--10 minutes max!

Some Thoughts On Challenging the Status Quo

by Terry Little

Terry Little
is in the civil service with the Department of the Air Force, where he has been a program manager for five major defense acquisition efforts. He entered the Air Force in 1967 and served on active duty until 1975. As a civilian employee, Mr. Little has been an operations research analyst, a program director for a classified program, a deputy program director for both a large, multiple-program office and a Navy-led joint program office, and a weapons development planning manager.

When I talk with project managers the question I get, perhaps more than any other, sounds like this: "I want to do things differently, but my boss is just not receptive. What can I do?" That question is always troubling to me because I have no ready answer.

Certainly people clinging to the status quo resent change and,oftentimes, the advocate of change too. This is so everywhere, but especially in Government, where an aversion to managerial risk abounds; plus, in Government, there is often a greater premium put on not failing than there is on truly doing something better.

So what do I say? One answer is, of course, to "go-with-the-flow." Many project managers choose this course because it's easier, less frustrating or less risky to them personally than being an advocate for change. For those whom the status quo is unacceptable, I have some thoughts that they might find useful.

Persistence Pays Off

Don't give up right away if your boss rejects your brave new idea for change. Repackage it differently and have another go. One successful approach I have found is to add an "escape provision" to the proposal. Show your boss how, if your idea begins to go awry, that you can revert to the status quo without a major catastrophe or embarrassment.

> "If you can't muster the courage to stay until the bitter end, then don't pick the fight!"

Another approach that can work is to show your boss how championing your idea will personally benefit him. Most often this means illustrating how implementing it will make him look good to his bosses. Tie your idea to the coat tails of some speech, document or policy emanating from the Agency's senior leadership. Another suggestion is to shower your boss with detailed analysis about why your idea will produce a better outcome than clinging to the status quo. Such an analysis may be nothing more than quantitative speculation but can be persuasive. Unfortunately, many managers,

especially those coming from scientific or engineering backgrounds, do not trust intuition or judgment as a basis for decision-making. Analysis works for them especially if there are numbers. Besides, if you have a lot of supporting analyses, your boss will know that you are earnest about your idea.

Finally, it really helps in selling your idea to a reluctant boss when you can drum up some allies or collaborators. These cannot be just anyone, but persons whom your boss is likely to find credible. Many bosses will resist any new idea coming from one person but will begin to embrace it when others also tout it as "good." It's called the "bandwagon effect," and it often works to good effect.

I would be derelict here if I didn't point out that being persistent in the face of bureaucratic obstacles implies being courageous. Challenges to the status quo threaten many people, their sense of self-worth, their belief that what they are doing is important, and, in some cases, their jobs. When bureaucrats feel threatened they fight rather than flee. The fight almost surely will be a relentless street fight where ad hominem attacks, whisper campaigns, and email wars are the norm. Commonly, those who feel threatened by change use the "chicken little" tactic, whereby they tout the worst imaginable outcome of a change as the most likely outcome. It takes true fortitude and passion for the agent of change to keep from withering in the face of fire. If you can't muster the courage to stay until the bitter end, then don't pick the fight!

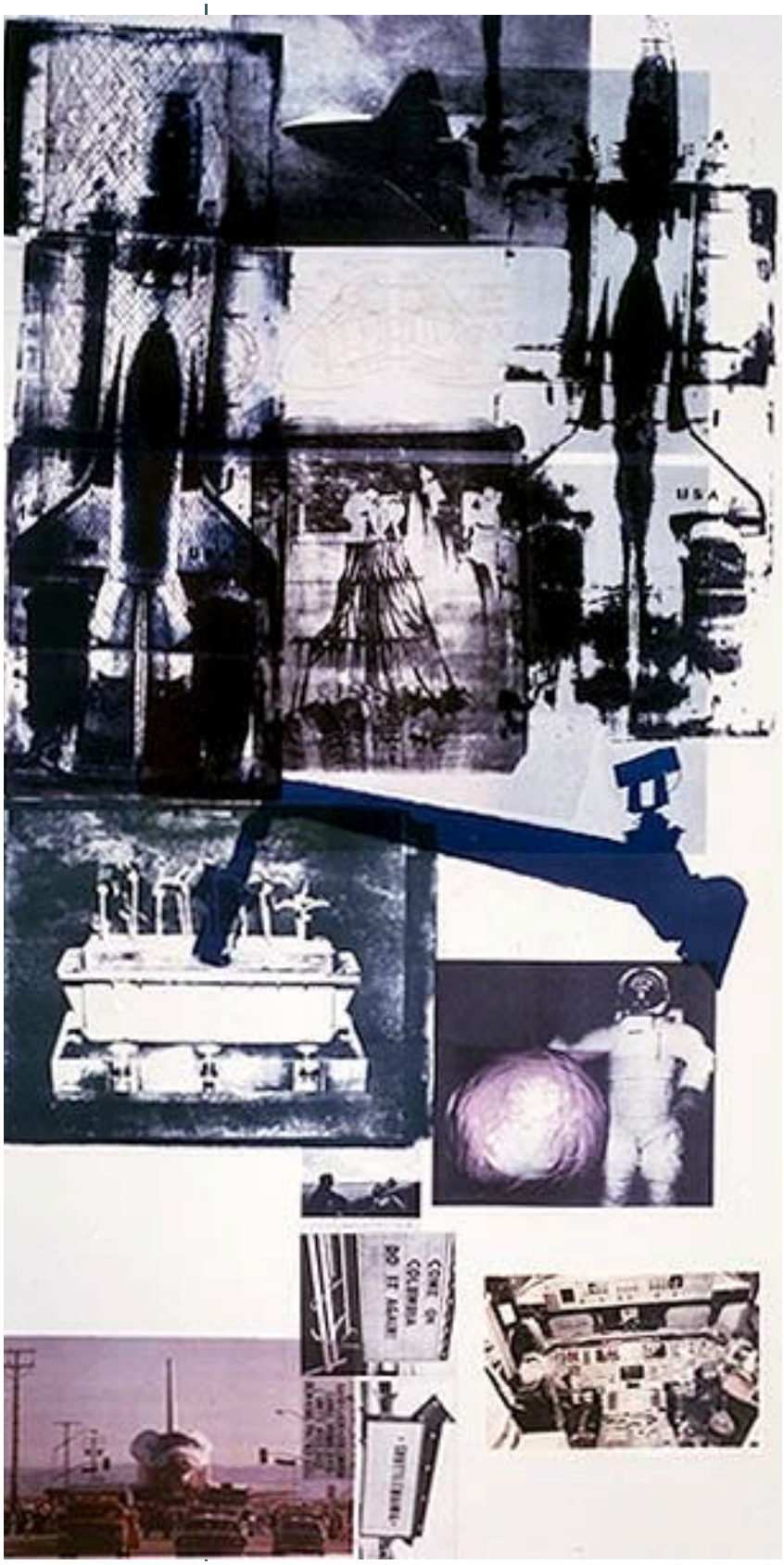
Selectively Challenging the Status Quo

In all our organizations there are doubtless many processes, practices and policies that need changing. My natural tendencies are to either go after them all in hopes of winning one or two, or to single out those that appear to offer the most promise for a dramatic improvement. Both approaches are probably doomed to fail. Challenging everything at once marks you as a "Don Quixote," someone who tilts at every windmill and is simply a dreamer. In short, you appear to lack credibility and no one takes you seriously.

"By succeeding at small changes, I have gained the credibility necessary to take a crack at larger changes."

The second situation, identifying those changes that would seem to offer the most improvement, is sinister in its allure. The problem is that such changes are likely to be the hardest to implement. In some cases they may involve statutory changes that are near impossible to make happen at any reasonable time. Look for what's doable--changes where the decision authority is clear cut--changes where it will be easy to secure influential allies--changes that can be implemented fairly quickly without having to get everyone and his brother to approve--changes that have some sort of precedent.

I've seen my own power to affect change grow over time. By succeeding at small changes, I have gained the credibility necessary to take a crack at larger changes. I admit it's tough to be patient, but in the long run patience pays off.



Right:
"Hot Shot," lithograph by Robert Rauschenberg depicts the Space Shuttle.

Focus on Execution

Any proposal for change can generate endless debate and consume enormous energy when deciding whether it is a good idea or not. As the advocate it's tempting to believe that getting approval to do something different is the end of the battle. Not so! It's only the beginning.

I have seen a lot of change proposals that seemingly were good ideas turn into disasters after the wheels came off during implementation. A few years ago I proposed to make past performance the most important factor in a big-dollar source selection of offerors. I knew it made eminent sense and resented that it was such a tough fight to get "the system" to agree. It was a major mindset change to have a factor other than cost or technical as most important. Nonetheless, after extensive dialog I won the battle, but as we got into actually doing the evaluation it quickly became apparent that I had vastly underestimated the complexity of doing what I proposed. Truly, "the devil was in the details." I had become so enchanted by the philosophical need for the change that I failed to come to grips with the pragmatic aspects of implementing it. What pulled us through were sheer doggedness and some luck.

"It's tempting to believe that getting approval to do something different is the end of the battle. Not so! It's only the beginning."

Ultimately the test of whether a challenge to the status quo is a move forward or backward is not resolved by debate; results are what matter. And make no mistake, if you challenge the status quo it follows that you must be accountable for and own the results, good or bad. If you can't do that, then keep quiet. Our system has more than enough critics willing to whine about the status quo but unwilling to accept accountability for the results.

Lessons From the Blind & Lessons in Leadership: Knowledge Sharing East & West

by Todd Post

Todd Post is the editor of ASK Magazine and works for Edutech Ltd out of Silver Spring, Maryland. He has written for many publications in print and online.

Dr. Alexander Laufer has a model called IQ Plus. Basically, if you bring experienced people together to talk,share stories, and test new ideas, the collective IQ of the group is greater than any one individual's IQ.

I had the pleasure of observing IQ Plus in action by attending my first APPL Knowledge Sharing Conference in December. Project managers from NASA Centers around the U.S. gathered to talk about project management, to listen and connect their experiences, to explore innovative concepts, and to discuss new tools.

The first two days, December 4-5, were in Atlanta, December 6-7 in San Francisco. The conference is held in two locations so that NASA project managers on the East and West Coasts do not have to travel far from their Centers to attend.

In Atlanta, keynote speaker Terry Little, Program Director for the Joint Air-to-Surface Standoff Missile Program and one of the Defense Department's most seasoned program managers, raised the temperature in the room with his interactive presentation "Cheaper, Faster, Better In Action." Following opening remarks by Dr. Michelle Collins and a brief presentation on APPL activities abroad by Dr. Edward Hoffman,Mr. Little led a spirited discussion for nearly two hours on managing risk, working in teams, selecting contractors and cultivating relationships with them. He also spoke about such wide-open issues as what does "leadership" mean in terms of project management. Dr. Laufer introduced Terry Little as 'the most radical and most creative Project Manager' in the Air Force. At 55, Terry Little's most radical feat may be his longevity in the Air Force. He has been challenging the status quo in the Air Force since 1967, and it is obviously a role he relishes, advising his audience "Deal with barriers and obstacles ruthlessly."

Todd Post demonstrates ASK magazine to KS participants.

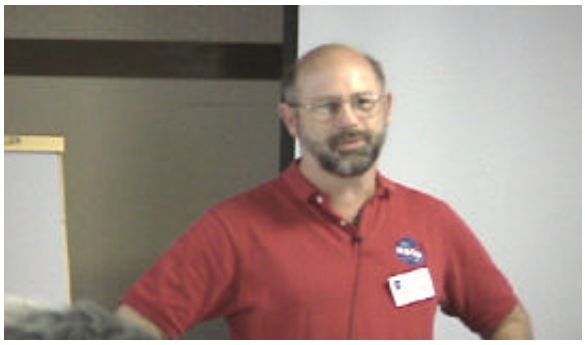
After the keynote presentation and the discussion that followed, we moved to a cozier location outside the conference room in

front of the Emory Center's magnificent stone fireplace. As the warmth of the fire helped folks to unwind, I seized the opportunity to get some feedback on ASK Magazine.

It was a great opportunity for feedback because several of those who had articles in the magazine were present. Richard Day, whose Best Practice on "Supplier Integration" appears in the first issue, sat down and I showed him his article laid out for the first time. Another person who came by was Steve Gonzalez, a soft-spoken project manager from Johnson Space Center, who read the articles with interest and then graciously thanked me for showing him the magazine.

None of us in Atlanta was prepared for the stunning presentation Steve gave the next morning entitled "What About the Passion? The Changing Face of NASA." Presentations were ostensibly about "The Role of Systems Engineering in the Faster, Better, Cheaper Era," but if that's how they began, there was no telling where any would end up as audience participation dictated the discussion more than anything.

In Steve's presentation, he talked about how a group of engineers in the Command and Control Center at Johnson built a working lab out of a dream of what they thought NASA should become by the year 2076. Part of their intention was to regain systems engineering skills they felt they'd lost to contractors who now had greater control of the hands-on work at the Center. But that was only the half of it. The real story was the courage and conviction of Steve and his colleagues who put together a plan that basically redefined the cutting edge at NASA.



NASA project manager Dougal Maclise at Knowledge Sharing West in San Francisco.

In San Francisco, where the conference resumed next day, Dr. Robert Sutton, Professor of Management Science and Engineering at Stanford University and co-author of The Knowing-Doing Gap with Stanford colleague Dr. Jeffrey Pfeffer, gave the keynote address. Sutton and Pfeffer's premise is that despite the expensive and time consuming efforts of many companies to try to improve their organization through education and training, and by hiring management consulting firms and reading all the latest research,the bottom line is that few actually bring about any significant change in their management practices. Pfeffer and Sutton sought to find out why there is such a discrepancy between a company's best intentions and their actual accomplishments. NASA project managers had plenty to say about this, but out of respect for those who let it all hang out I'll be discreet and just note you should have been there.

As in Atlanta, the second day began with a diverse group of presentations. These all came under the broad heading "Challenging the System," and what the project managers came up with was as idiosyncratic as you'd expect given such freedom to be inventive.

"Poignant" is not a word we expect to use about a presentation at a NASA conference, but that may be the best word to describe Dougal Maclise's presentation, "Lessons from the Blind," about his first job after graduating college and working for the Portland Public Schools as an equipment designer for handicapped children. Dougal read a story about working with a blind boy named Bobby Smith, helping him to walk alone from his house to school.

On a cursory reading of the story there would appear to be no apparent relationship between a blind boy and NASA project managers, but as we discussed after Dougal's reading, we considered it as metaphor for the challenges faced by project managers daily. What made the story so compelling was the many ways it could be interpreted, and the project managers who had the good fortune to be there appeared to have no lack of imagination in coming up with interpretations. Everyone seemed to be able to relate to the plight of the blind boy, and to Dougal's plight as well.

Interestingly, no presentation in either Atlanta or San Francisco elicited as much participation as this one, in part, I'm sure, because of its novelty. I was blown away by how creative the project managers were about what could be learned from parables so seemingly unrelated to NASA. Indeed, as the title of the story makes clear, there were lessons to be learned from the blind, and we studied them.

In San Francisco, KS participants discuss Colin Powell's "18 Lessons on Leadership."

Both the Atlanta and San Francisco meetings ended with a group discussion of an article by Secretary of State Colin Powell entitled "18 Lessons on Leadership." Project managers were put together in small groups to discuss 6 of the 18 lessons. "Lessons" may not be the best word to describe them, however. They were more like aphorisms, ranging from familiar advice such as "Don't be afraid to challenge the pros, even in their own backyards" to glib musings of the sort "Command is lonely" and "Perpetual optimism is a force multiplier."

Project managers read the assigned lessons and discussed their relevance in terms of their day-to-day experiences at NASA. Thinking back to Dr. Laufer's theory of IQ Plus, I would argue it's group activities like this that provide the greatest opportunity to realize the utility of collaboration, dialogue, and story telling.

The individual presentations are great,interesting, compelling, and sometimes, as in the cases of Dougal Maclise and Steve Gonzalez, spellbinding; but the most value for the buck at a conference like this seems to me to be these group activities where everyone is involved. The more people involved, the more knowledge there is to share.

For me, attending the conference certainly increased my appreciation of the challenges faced by NASA's best,and it emphasized the importance of knowledge sharing as a professional development tool. It was also a great introduction to many people I look forward to meeting again and learning more from about project management and its ups and downs. See you at the next one.

Cross-Training Within the Project Team

by Owen Gadeken

Background

Project teams are often hampered by internal conflicts between team members from different functional organizations. What happens is that team members form stereotypes and make snap judgments about what their colleagues are doing and why. This conflict typically occurs between technical project members and contractors. To prevent this kind of conflict from undermining the project, I believe it is helpful to set up short cross-functional training sessions that allow project team members to explain the key elements of their job to the other members of the project team. The intent of these sessions is to: (1) establish closer cross-functional working relationships among project team members; (2) identify dysfunctional gaps and overlaps between team members; (3) raise the general level of project knowledge among team members; and (4) raise the level of trust and openness among all project team members.

Dr. Owen Gadeken
serves as a Professor of Engineering Management at the Defense Systems Management College (DSMC) located at Fort Belvoir, Virginia. He has extensive experience in management training, project management, and executive development. Before joining the faculty at DSMC, Dr. Gadeken was a manager at the U.S. Department of Energy Operations Office in Oak Ridge, Tennessee. Prior to that, he served as a civilian engineer and active duty officer with the U.S. Air Force Armament Division at Eglin Air Force Base, Florida. Dr. Gadeken has B.S. and M.S. degrees in Chemistry from the University of Nebraska, an M.B.A. from the University of West Florida, and a Doctorate in Engineering Management from the George Washington University. Dr. Gadeken has published over 30 articles and papers on project management and leadership in nationally recognized journals.

Procedures

1. The project manager sets up a series of team meetings over the course of the project for each team member to summarize his or her role on the project.

2. A format is established that includes the team member's major responsibilities, key inputs from other project team members and outsiders, and key outputs to the others and to the project itself.

3. The project manager (or designated focal point) convenes each session with a brief review of the project goals, asks one or more team members to make their presentations, and then facilitates a discussion of issues and actions to improve the interface between all team members.

4. This process continues as the project progresses so that team members have periodic opportunities to brief each other on their contributions and discuss their working relationship.

"Go for the Stars" oil by P.A. Nisbet depicts the essence of a launch.

Partnering With the Customer

by Oscar Toledo

Oscar Toledo
is the Associate Director for Technology at the Kennedy Space Center and has received the NASA Exceptional Service Medal.

Background

At times we become so involved in a project that we forget about the customer. What the customer requires, needs, and expects of us should always be the driving force behind our efforts. Such thinking leads to the logical conclusion that recruiting the customer's active involvement is a critical component of project management. Without question the customer should be part of the development team. One way to integrate the customer into the development team (civil servants and/or contractors) is to set up a partnership. This will be different from the traditional customer-supplier relationship. This type of arrangement is not always possible depending on contractual and/or disclosure obligations of the project. When the project manager is at liberty to do so, he or she should seriously engage the customer. In my experience, I have always found that even in extremely technical and politically challenging projects, the customer has been the key to the successful implementation of the project.

Procedures

1. The customer and supplier should agree on a partnership for the purpose of developing the product or providing a service. The partnership should require the customer to provide personnel with appropriate backgrounds to actively participate as members of the project management team, the subsystem development teams, and the integration and validation team (the teams could vary based on project needs). The supplier must create an environment in which the development team accepts the customer and there is open communication between all parties.

· From the start, establish that the customer is a member of the development team.

· The customer/supplier team (CST) is responsible for the Formulation Phase in the definition of requirements, budgets, timelines, performance, and expectations.

· The CST is involved in the architecture development/evaluations, trade studies of cost, performance, and schedules.

· The CST is involved in the generation of the baseline project plan containing performance, cost, schedules, and risk assessments.

2. The customer and the project manager are together involved in the approval phase of the project. This is a relationship of collaboration, not a customer-to-supplier relationship.

3. The CSTs have joint responsibility for the Implementation Phase of the project.

· The customer works side by side with the supplier and is held accountable with the rest of the team for meeting milestones.

· The customer is actively involved in risk, performance, schedule, and cost trade-offs made during implementation and for keeping open communications with management.

4. The customer also has a critical role in the Evaluation Phases throughout the development cycle.

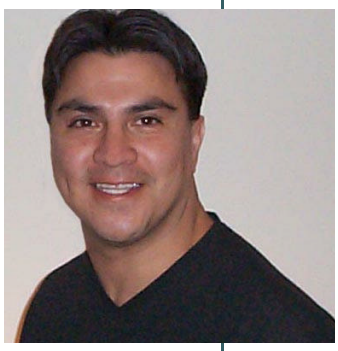
· The customer is one of the key players in the evaluation process, providing valuable insight, acceptance, and sharing in the responsibility for project status and any redirections.

"The Immersion," depicts astronaut training in the Neutral Bouyancy Simulator at Marshall Space Flight Center. An Astronaut is practicing EVA activities on a mockup of the Hubble Space Telescope.

ASK talks with Tim Flores

Since joining the Agency in August 1990, Tim Flores has spent the better part of his career at the Ames Research Center in Northern California. Presently, he is one of an elite group of NASA project managers enrolled in a System Design and Management program at the Massachusetts Institute of Technology (MIT).

We caught up with Tim last December at an APPL Knowledge Sharing Meeting in San Francisco. He flew in from Cambridge for the two-day conference and had to rush back immediately afterwards to prepare for end-of-semester finals. Despite his hectic schedule, he seems relaxed and pleased to try and be everywhere at once.



Tim Flores
has been a key project manager and leader at NASA Ames Research Center for the past 10 years. His most recent position was as Activation Manager of the newly remodeled Unitary Plan Wind Tunnel, an $85M restoration program. Prior to this position Mr. Flores actively managed a variety of critical, high-risk projects. He holds a Bachelor of Science degree in Aerospace Engineering from the University of Texas at Arlington and is currently completing a Master of Science degree in System Design and Management at the Massachusetts Institute of Technology. He has been attending MIT as part of the PMDP-ALO program, where his studies have emphasized corporate strategy, system architecture and systems engineering. His current research centers on organizational characteristics of successful handoffs between developmental and operational teams within a project.

ASK: What motivated you to enter the MIT program at this point in your career?

Flores: I love learning. By learning I mean both professional and self-development. Before I came to MIT, I was constantly trying to learn more about project management and how to be a better leader. In a way, it was like they invented this program for me. I was trying to do it on my own, but couldn't find time to go to school.

ASK: Was it difficult to go back to school after being out for more than a decade?

Flores: The difficult part was I forgot the time commitment involved to study full time. But I got used to that again pretty quickly. I didn't have much choice.

ASK: I would expect the project managers enrolled in this program are all academically inclined. Great students when they were in college. Was that a prerequisite?

Flores: It's funny, I don't think of myself as academically inclined. In high school I could have easily been voted 'Least Likely to Succeed' in my class.

ASK: Probably not "least likely."

Flores: You didn't know me in high school.

ASK: Okay, but there must have been some change in you at some point. Few people go from being Least Likely to Succeed in his class to being in an MIT graduate program.

Flores: I changed a lot when I went into the Army. I got some discipline and realized the life I was leading wasn't what I wanted.

ASK: How did you go about changing yourself?

Flores: I started by doing little things for self-confidence, saying things to myself like, 'Today, or this week,I'm going to speak in front of a group if I get the chance.' It was mostly about holding my head high and believing in myself.

ASK: How did you become a successful project manager?

Flores: I'm very driven. I think all successful project managers are. You've got a lot of responsibility and it can be overwhelming at times. No one else is going to drive you, and people are looking to you for leadership.

ASK: Was there a turning point in your career at NASA when upper management decided you were someone to start grooming for a leadership position?

Flores: Probably the single biggest event in my career was in 1997 when I was a member of the Tiger Team in the 12-foot pressure wind tunnel. If the Wind Tunnel was going to be successful, we knew we needed to put together a better training program than what we were currently offering. I took over the training with very little time to get it done. I had to be very careful in conveying that the earlier training wasn't done well. I got them to accept that, and we ran the training for 6-weeks with more than 100 people involved. That was a pretty big deal because no one had attempted such an ambitious training program in such a short time frame. In the end we accomplished way more than we ever thought we could. That was probably the point at which people began to notice me.

ASK: At MIT you've met a lot of other successful project managers. What's the biggest difference between managing a project at NASA as opposed to managing one in private industry?

Flores: At NASA we have a lot of programs where it's one strike and you're out. You can't afford to make a mistake in that environment. You've got to be very meticulous about the details you look at and the way you review things. In private industry, depending on the size of the company, you may or may not have process guidelines to follow. For example, a mid-size software company I know of, does not do risk management at all. They deal with what they can when they can and don't spend any time with such things as fault

"Before I came to MIT, I was constantly trying to learn more about project management and how to be a better leader."

trees or other such strategies.

ASK: Did you ever feel like a fish out of water with these other project managers from private industry?

Flores: At first I found myself a lot of times converting things in class. I thought, 'Okay, how do I convert this principle to the way government does things?' Eventually, I relaxed and found myself thinking it's not that different really. In government there's sometimes more bureaucracy to deal with but the value of the process is the same. I think it comes from the fact that the Agency is very much in the eye of the public. We like to think of ourselves as setting the standards so we tend to be very meticulous and sometimes over-constrained.

ASK: Isn't bureaucracy a huge obstacle?

Flores: I tend to think that it's the end results that are most important. When you achieve results in government, it doesn't always matter how you got there. I think the government does allow their project managers to be creative. When they're achieving results and they're doing it safely, the ability not to play by the rules and be creative is there.

ASK: What do you think will be the biggest difference in how you manage after you finish the MIT program?

Flores: Hopefully, being creative at using the new tools I've learned. My tool bag is going to be full, just full. One of the first things I want to do is start separating out those tools to determine which ones are appropriate in what situations.

"I've always tried to stave off dissension, so I will take the time to sit down and explain to anyone the decisions I'm making when they don't understand."

ASK: Can you offer an example of how you would use one these tools?

Flores: Well, one example would be in trying to understand what the problem is you must solve. A lot of times you assume the problem posed to you is the correct one. Sometimes the customer doesn't know exactly what they want. That may require taking steps backwards to understand what the customer's needs are. Imagine a testing situation: you set everything up in advance to solve the problem you thought it was, and then you find out you have to make many adaptations to solve what the real problem is. By spending more time questioning the customer early on, that's a better use of your time and theirs. The key is asking the right questions early.

"By spending more time questioning the customer early on, that's a better use of your time and theirs."

ASK: Is persuading a customer of what they want a common problem?

Flores: More often it's persuading your team, getting them to see the big picture, and then conveying the importance of customer satisfaction. You always have a customer whether it's your direct manager, the public or someone else. One of the things I try to do in situations like this is get people to see the 'Big Picture.' You try to get them to understand the objectives of the entire program, the wider context factors for the Agency or the Center, the unique constraints we're operating under--that sort of

thing. You convey that information so that hopefully they understand your decisions. If they understand why I made a decision, it's more likely they'll buy into the decision.

ASK: What tools do you use to do this?

Flores: Communication is the big one. Being able to talk to people in a non-threatening way and explain why you're making the decisions you are making and also by making them feel that their opinion counts. When you have dissension in the ranks that's always dangerous. Success depends on a team effort. I've always tried to stave off dissension, so I will take the time to sit down and explain to anyone the decisions I'm making when they don't understand. They may not always agree with me, but they appreciate the effort I'm making and that matters in reinforcing that we're a team and we all need to be what's going on and why.

ASK: So what are your plans once you finish at MIT and return to NASA?

Flores: I want to lead Agency programs. In the future I hope there will be opportunities to step up as one of NASA's leaders. That's what I'd like most.

Letters on Issue One

The following are a selection of comments from our readers to the release of our first issue.

I took some time to look into Volume One of ASK magazine. The first two letters from the Director and the Editor-in-Chief spoke volumes on dealing with uncertainty in Program Management and how to improve on what we do. I can easily relate to and see the passion in NASA's project work. Great start! Share more! Much success to you.

J. Mike Watson

U.S. Coast Guard

I think the ASK is right on target. Crisp, readable articles and commentary, a diversity of subjects/viewpoints and interviews. I consider ASK much better than the DoD Program Manager in terms of its broad appeal, utility and diversity. Your challenge will be to maintain the high level you have set with this first issue which, in turn, means that you will have to maintain the diversity of your contributors somehow.

Terry Little

U.S. Air Force

Great magazine! The layout is elegant - visually appealing and easy to read yet with a minimum of graphics. The pages download quickly over phone lines, essential for anyone that might want to read ASK while TDY and using dial-up access. The articles were about right in length, providing a good story but not too long. I hope these characteristics remain.

I would consider adding two items. One, a summary of important lessons learned from the stories. Second, add links to appropriate reference material.

David Hinton

Langley Research Center

When I went to the website, I briefly looked through the table of contents. I noticed Michelle Collins had written an article. I read the article, which was very concise and interesting. Back at the TOC, I noticed there was an interview with Elizabeth Citrin, project manager of MAP; so I read it (it was great to learn about

her, how she came to the position of project manager and what her challenges were). I then read John Hraster's article of just saying "NO", etc., etc. This is just fascinating. I was being absorbed by this really quick way of getting insight and knowledge.

Debra Dajon
Langley Research Center

Specifically regarding Charlie Stegemoeller's article:

Thanks for sharing your story, career, and insights in ASK magazine! I found it similar to many of my experiences of the past 35 years at JSC, of the tremendous influence of the older mentors that I informally selected,and to get out and develop myself. I find in the reduced work force environment now that there is less time for informal interaction, sharing, coaching, and mentoring. Formal training programs are increasing to provide information and tools, but are not able provide the day-by-day development and encouragement. Thanks for sharing your lessons learned!

Steven Martin
Johnson Space Center

You can read Charlie Stegemoeller's article "How Did I Get Here?" in ASK Volume I by clicking here.

Respond to What You Read

Sharing project management experiences is what ASK Magazine is all about. Have you been in a situation similar to ones described in the magazine? Tell us what happened.

In our next issue, we look forward to posting your comments on the Feature, Interview, Best Practices, Personal Stories, and Letters from the Director and Editor in Chief that appear in this issue; or simply posting your comments on ASK. Our goal is to close the Loop on each of these sections every month.

Send comments or questions to:
tpost@edutechltd.com

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Charlie Stegemoeller

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