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ASK

INTERVIEW

Cathy Peddie

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There's a whole reservoir of knowledge out there that I didn't know to tap.

—Judy Stokley, from her "My Schooling In Leadership" (p 10)

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Welcome to the Academy of Program and Project Leadership (APPL) and *ASK Magazine*. APPL is a research-based organization that serves NASA program and project managers, as well as project teams, at every level of development. In 1997, APPL was created from an earlier program to underscore the importance that NASA places on project management and project teams through a wide variety of products and services, including knowledge sharing, classroom and online courses, career development guidance, performance support, university partnerships, and advanced technology tools.

ASK Magazine grew out of APPL's Knowledge Sharing Initiative. The stories that appear in *ASK* are written by the 'best of the best' project managers, primarily from NASA, but also from other government agencies and industry. These stories contain genuine nuggets of knowledge and wisdom that are transferable across projects. Who better than a project manager to help another project manager address a critical issue on a project? Big projects, small projects—they're all here in *ASK*.

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Mining the Forum

The APPL tree of knowledge bears fruit once again

YOU MAY RECALL A STORY FROM THE LAST ISSUE ABOUT how *ASK* provided the impetus for two project managers from different NASA centers to come together to solve a problem (See *ASK 10*, "So This is Knowledge Sharing," by Susan Motil). In this issue, we offer another story about knowledge sharing. This one occurred at the APPL Masters Forum.

Masters Forums, held semi-annually, bring together the best project managers from NASA, other government agencies and private industry for three days of knowledge sharing, mostly in the form of stories. Few *ASK* readers may realize it, but many of the stories we publish originated at the Masters Forum. It makes sense, as *ASK* is only one piece of the Knowledge Sharing Initiative. Perhaps you saw the article in the *Washington Post* (11/29/02) about the interrelatedness of the Knowledge Sharing product line: *ASK,* Masters Forums and Transfer of Wisdom Workshops. (More on the Transfer of Wisdom Workshops next issue.)

In February '02, Roy Malone of Marshall Space Flight Center attended a Masters Forum and heard Judy Stokley, a program director in the Air Force, talk about using some innovative approaches to address a government-mandated drawdown of her workforce. Stokley was able to accomplish the drawdown while finding creative ways to minimize the impact on the people she had to let go. Facing a mandated drawdown at Marshall in his Logistics Department, Malone reflected on what Stokley had done and adapted some of her ideas. The story he wrote for us this issue shows how.

Roy Malone's story, "Thank you, Judy," is also an important story because it shows the breadth of the APPL Knowledge Sharing Initiative. The Malone story demonstrates how APPL not only facilitates knowledge sharing within NASA but also across government agencies. One of the hallmarks of the Knowledge Sharing Initiative is the variety of project practitioners who have participated in either the Forum or *ASK*. Those of you familiar only with *ASK* will recognize the space we've given to non-NASA contributors, most notably Terry Little and Scott Cameron.

Along with Malone this issue, we have a story by Judy Stokley, "My Schooling in Leadership." Several years ago, Stokley enrolled in a class at the Defense Systems Management College and the experience completely changed her thinking about what it means to be a leader. Stokley's story shows that if you approach a learning opportunity with an open mind, you may come home with something better than expected. We hope the same has happened to you by reading *ASK*.

This issue we also have several stories about planning. Here again, there is a Masters Forum connection. At the August 2002 Masters Forum in Tysons Corner, Virginia, we asked some of the best project managers we know to appear on a panel to swap stories about planning. Ken Schwer was one of those panelists, and his story from the Forum appears here. Marty Davis was a member of the panel and his story is here. Terry Little and Scott Cameron's dialogue about how speed impacts a project stemmed from this planning panel at the Masters Forum.

Masters Forums are always a great source of material for *ASK,* and we have struck a rich vein this issue. Hope you enjoy. •

TERESA BAILEY has been a librarian at the Jet Propulsion Laboratory for more than 20 years. In addition to performing typical library functions such as cataloging and reference work, she is the Program Development Coordinator for the JPL Library and she coordinates the JPL Stories series. Currently a doctoral student at the Fielding Institute, Teresa is researching the role of aesthetics in organizational learning and knowledge management.

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.

MARTY DAVIS is the Program Manager of the Geostationary Operational Environmental Satellite (GOES) at the NASA Goddard Space Flight Center (GSFC) in Greenbelt, Maryland. The recipient of many honors, he received NASA's highest award, the Distinguished Service Medal, in 1995. He has also received the NASA Outstanding Leadership Medal (1991) and the NASA Exceptional Service Medal (1979). He has worked at NASA since 1962.

DR. OWEN GADEKEN is a Professor of Engineering Management at the Defense Acquisition University where he has taught Department of Defense program and project managers for over 20 years. He retired last year from the Air Force Reserve as a Colonel and Senior Reservist at the Air Force Office of Scientific Research.

DR. EDWARD HOFFMAN is Director of the NASA Academy of Program and Project Leadership. He is responsible for the development of program and project leaders and teams within NASA. He develops training curricula, consulting services, research projects and special studies in program and project management.

DR. ALEXANDER LAUFER is the Editor-in-Chief of *ASK Magazine* and a member of the Advisory Board of the NASA Academy of Program and Project Leadership. He is also a visiting scholar in the Civil Engineering Department at the University of Maryland at College Park and Dean of Civil and Environmental Engineering at Technion-Israel Institute of Technology.

TERRY LITTLE is currently the Director of the Kinetic Energy Boost Office of the Missile Defense Agency. Before that he was the head of the Air Force's Center for Acquisition Excellence. He is one of the Air Force's most seasoned program managers. He entered the Air Force in 1967 and served on active duty until 1975. In 1997 he was promoted to the grade of SES.

ROY MALONE serves as the Deputy Director in the Safety and Mission Assurance (S&MA) Office at the NASA Marshall Space Flight Center (MSFC). He is responsible for planning, directing and coordinating the safety, quality assurance and reliability activities for the Center and its assigned Programs and Projects. Prior to his assignment in S&MA, he served as the MSFC Logistics Services Department Manager.

RAY MORGAN has recently retired as Vice President of AeroVironment, Inc., where he established the Design Development Center in 1980, serving as Director until April 2000. He oversaw more than 75 projects and the development of over 50 unique vehicles, including over 35 Unmanned Aerial Vehicles (UAVs) during his tenure at AeroVironment Inc.

TODD POST is editor of *ASK Magazine* and works for EduTech Ltd. in Silver Spring, Maryland. In April, he will speak about *ASK* and the rest of NASA's Knowledge Sharing Initiative (KSI) at the E-Gov Knowledge Management Conference in Washington, DC. His article about *ASK* and KSI was published in the January/February 2003 edition of *Program Manager.*

KEN SCHWER is currently the Project Manager of Solar Dynamics Observatory, the first Living With A Star mission. Other assignments have included work with the Hubble Space Telescope First Servicing Mission and the Geostationary Operational Environmental Satellite (GOES) Program. While at GFSC, he has been honored with the NASA Exceptional Achievement Medal, GSFC Flight Projects Mission Impossible Peer Award and *Aviation Week* Laurel Award.

FRANK SNOW has been a member of the NASA Explorer Program at Goddard Space Flight Center since 1992. He was the Ground Manger for the Advanced Composition Explorer (ACE), and project manager for the Reuven Ramaty High Energy Solar Spectroscopic Explorer (RHESSI) and the Galaxy Explorer (GALEX). He began his career with NASA in 1980.

JUDY STOKLEY is presently Air Force Program Executive Officer for Weapons in Washington, D.C. She is responsible for the cost, schedule, and technical performance of a portfolio of air-to-air and air-to-ground weapon programs. These programs represent the leading edge of weapons technology.

Project Planning and "The Three Little Pigs"

Remember the fairy tale, "The Three Little Pigs," and how the first pig built a house of straw? Nice, light, cost-conscious straw

THE ONLY PROBLEM WAS THE HUNGRY WOLF THAT CAME along one day and knocked on the door. The wolf asked to be let in, and the pig quite reasonably replied, "Not by the hair of my chinny, chin, chin." Unfortunately, the wolf simply huffed and puffed and blew the straw house down, and pig number one had to shake his bacon to get to the second pig's house.

The second pig had nominally improved the quality of construction by using wood. Once again, however, the pigs were forced to scurry when the wolf's resolve proved stronger than the structure. In the end, our pigs were saved by the foresight, concern for quality and use of top materials by the third pig, who had built his house of brick. The wolf could not get into the house and the pigs survived, presumably to live happily ever after.

At first glance, the lessons are obvious. Be industrious, plan for future threats and never short change quality specifications. On further review, the difficulty and risks of project planning are much more complex.

Imagine the story without the wolf. Suddenly, the third pig becomes a goat. His mug appears on the cover of newspapers exposing and criticizing the flagrant and excessive costs of the brick house. Pigs one and two are lauded for exceptional and efficient construction management, while pig three is used as a case study in mismanagement. The wolf is so vital to the definition of success that one might be led to wonder if pig three contracted with the wolf to harass and threaten the others.

In any event, the uncertainty of future events makes project planning a slippery endeavor. Was the third pig a better strategic and tactical planner, or just lucky? Did the use of risk management techniques indicate the probability of marauding wolves? Was the selection of brick based on a cost benefit analysis of the situation? One will never know. That sort of background information wasn't included in the fairy tale.

TED FRYMARK

One thing we can say for certain is that experienced project managers realize that environmental realities figure prominently when determining what risks jeopardize a project. To what extent they plan for a wolf at the door probably depends on what experience they have that a wolf will show up there. The dilemma all project managers face is deciding which risks are too costly to plan for, and which ones are too costly not to plan for. •

thank you, Judy

THIEN-KIM PHAM

by Roy Malone

Budget cuts, no matter how you slice them, mean somebody is usually left bleeding. In this story, Roy Malone of Marshall Space Flight Center explains how he dealt with cuts at the Logistics Department where he managed

IT WAS A CLASSIC CASE OF DENIAL. I DIDN'T WANT TO believe my budget was being cut by 12 percent. I didn't want to believe I had to lay off people.

I had gone to my boss to try and make a case for why I needed the money, and she said, "Sorry, Roy, but the Center's budget has been reduced, and you have to figure out a way to work through these new budget challenges." I went to the Chief Financial Officer to make a case, and heard the same thing. After about a month of trying to figure out ways to get around it, I finally had to accept the fact that these cuts were real. I would have to cut $1.1 million out of my $9.3 million budget.

Part of the reason I struggled with this situation was because I had gone through a big downsizing myself when I was a government contractor about ten years earlier. I didn't get laid off, but it made me feel like the government didn't care about people, and as a contractor I saw how productivity went down after the cuts were made.

Back then, they got everybody together in a big room and handed us all a pre-labeled envelope. We took our envelopes back up to our cubicles to open them. Inside, a note said, "Thank you for your services, but they're no longer required," or "Thank you for your services; we'd like to continue to use them." After we had read our notes, we began peeking our heads over the dividers to ask people in the cubicles around us, "Hey, buddy, what'd you get?" It was that kind of thing, just terrible. I didn't want to put the contractors who worked for me through a similar scenario.

So now the shoe was on the other foot, as they say. I was department manager for logistics services at Marshall Space Flight Center (MSFC), and I had contractors for whom I was responsible. These were the people who manned warehouses, stored material for the projects and moved furniture around the Center. These were taxi drivers and bus drivers. These were people who fixed lab equipment and who procured flight hardware for programs and projects.

I didn't treat them any differently than I treated my civil servants. Since taking over the Logistics Services Department, I had dedicated myself to making the contractor a full member of the organizational team. I spent time going out to visit with these guys. I went around to the locations where they worked and shook hands with them. I included them in the Logistics Services Employee of the Quarter program. I took the truck drivers out to lunch and talked with them about what was going on, and I took action on their input.

This was going to be hard, very hard, for me. I didn't enjoy the taste of biting this bullet.

Food for thought

Around this time, February 2002, I headed out of town for the NASA Masters Forum, sponsored by the Academy of Program and Project Leadership. The Forum is where the best of the best project managers in NASA and industry get together for a couple of days of knowledge sharing, and this one came at a particularly good time, providing me with a welcome distraction from the budget cut. The first night's speaker was an Air Force program director, Judy Stokley, who told a story about how she had implemented a number of reforms on one of her programs with remarkable results, including a painful downsizing of contractor personnel and civil servants.

What inspired me about this was that she took a "humanitarian" approach. She partnered with the contractor to figure out how to minimize the impact on people. She didn't release them all at once, for example, but gave them time to find other jobs. She talked about how she met with all the employees in an open forum and answered questions about why this was happening and what was going on. The thing that struck me was she got personally involved. When I was a contractor and we had our big downsizing, the government just told the contractor to go work it out. In Judy's case, it was apparent that the government cared about what happened to the people who would lose their jobs.

I didn't know if I could do the same thing in my case, but it gave me food for thought. When I got back home, I came up with a plan. If I could apply some of the things that I learned from Judy and leverage the Marshall Space Flight Center Values in my decisions, I would be successful in this painful process.

Inspiration realized

The first thing I did was put into action the MSFC values of "teamwork," "innovation" and "people." I met with the contractor to talk about innovative approaches to the reductions. We sat down together to see if we could find money from other places, non-people areas, so that we could reduce the number of people we would have to lay off. For instance, we were able to turn some vehicles in that we didn't need. I also challenged the contractor to be a little bit more careful with the supplies, materials and repair parts money. Instead of having three additional sets of belts on hand for a vehicle, maybe they could get by with only two. Maybe they didn't need to reorder as soon.

One of the ground rules that we established up front was the importance of continuing to provide products and services in an excellent manner so that we minimized the impact of the downsizing on our customers—in keeping with the MSFC values of "customers" and "excellence."

The way I look at it, you jeopardize your credibility as a manager if you're not open with folks, so I went public about the cuts we were facing. A lot of people thought I was crazy. They believe that once you announce layoffs, you should get the people out the door immediately so that you reduce the amount of mischief that can happen. Judy Stokley announced her reductions six months in advance; people had six months with a paycheck to find other jobs. I didn't have six months, but I was able to give my contractor a three-month warning.

I really believed that this approach was in keeping with center values to treat other people with dignity and respect, but I needed to strike a balance between the "people" value and the "customer" value. You take a chance when you give notice about a reduction in force. You run the risk of everybody getting agitated and their work performance going down. When people are worried about their jobs, it's hard to come to work and give 100 percent. The longer you string it out, the more worried and upset people are going to be. Maybe the good people will leave, and only the least effective ones will remain. These were legitimate concerns, but it seemed to me there was a way to treat workers fairly at the same time that I reduced the potential impact to our customers.

{ I didn't enjoy the taste of biting this bullet. }

Here I borrowed from Judy and the MSFC values again. Judy held monthly forums, where she met with her entire team for "no holds barred" question-and-answer sessions. Like Judy, I had people who were angry, and I allowed them to vent in these meetings. They saw furniture arriving, brand new furniture. How come the Center had money to buy new furniture, but not enough

{ What they wanted from me was honesty, and that's what I gave them. }

to pay the people who receive and deliver it? That was one of the questions that I got. They wanted to know why we were building a new recreation facility for our civil servants and contractors. Why in the world would we build something like that when we were laying off people?

I had to do a lot of educating about how money came to the Center. Some money comes directly from Headquarters and goes to programs and projects, I explained. Money to pay the salaries of contractors comes out of a different pot.

I made myself available on four separate occasions to meet with them, and I didn't refuse any questions. For the most part, I was able to explain just about every one of their questions. I was completely upfront with them about the money I had to work with, and I explained to them all the things that I was trying to do. The bottom line is that I was sincere. When I addressed them, I said I was worried about every one of them. I knew they had families to support. I knew they had bills to pay. I told them that I was doing everything in my power to minimize the impact on their lives.

They saw that I was concerned and that I cared about them. They didn't blame me personally for the budget cuts, but they would have been furious to know I was concealing something from them. What they wanted from me was honesty, and that's what I gave them. I think it helped that I used to be a contractor. I knew to a certain extent how they felt, since I had gone through one of these reductions myself, and I really did care about these people. That's the truth, and that helped all of us get through the budget cuts with the least amount of damage to the contractors, to me and to the agency.

In the end, the impact from announcing the layoffs early was minimal compared to what most people thought would happen. The ones who stayed on continued to be productive. They felt that they were treated fairly, and they saw I wasn't trying to work this all by myself. I welcomed their input and encouraged their partnership. In the short term I may have taken a risk in being candid about the budget cuts, but in the long run I believe it was the right thing to do for everyone. With a balanced take on my Center's values, I was able to treat people with dignity at the same time that I maintained excellence of service and kept my customers satisfied. •

Lessons

- Knowledge is recyclable. Organizations benefit when experienced practitioners share their stories liberally and the right people hear them.
- Be honest with your team about bad news. A lack of integrity makes a bad situation worse.
- Manage through your organizational values. They are just not a concept that you post on the wall. If used when making tough decisions, they can act as guideposts in your road to success.

Question

Time is the most precious resource a manager has. What types of situations merit expending additional effort to enhance the probability of a long-term benefit?

THIEN-KIM PHAM

From the *ASK* ARCHIVES...

My new job looked great on paper, head of logistics services at Marshall Space Flight Center, but I had to wonder when I arrived if they expected me to manage an office or perform miracle cures. Morale was so low I felt like I needed a life support system to keep it from expiring altogether.

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 would be rewarded. We did it the McDonald's way, putting a plaque up in the office and adding the names. People also got their picture on the wall, a certificate and lunch on me.

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

Getting extraordinary things done in an organization is hard work. Leaders have to recognize contributions to the effort or they will never motivate people to perform.

—*Roy Malone,* ASK Magazine*, Issue 2*

My Schooling in LEADE

I've learned more and more to trust that if I am working with the right people and I set up the right structure that they can make everything happen

THIEN-KIM PHAM

"I just want to make sure you get things done."

When I started out in management I tried to keep track of every detail on a project. In fact, I always say, "It is a good thing that wisdom comes with age" because I don't believe I could physically take the hours I used to work.

I used to work 7 days a week. I remember one year I didn't take a weekend off for 12 months because I thought I had to do everything. I don't do that now, and the people who work for me seem to get more done. I got to this place by learning to trust the people working with me. It wasn't that I didn't have the confidence in the people who worked with me before; I just didn't know how to leave them alone.

In the early '90s, I took some courses at the Defense Systems Management College (DSMC). One teacher there taught a course in Human Relationships, and it changed my life. The course was about leadership and how to communicate with the people on your team. Unfortunately, most of the other 20 or so people in the class ignored the instructor or, worse, made fun of what she was saying. They called it the "touchy feely" class. Understand this was 10 years ago; I think that today there would be more openness in accepting this kind of knowledge.

I loved what the instructor was saying, and I absorbed it like a sponge. It was the first time I even knew such stuff existed. I had chosen a technical career and spent my adult life studying technical issues, including all my training courses after I went to work for the Air Force. I took the Myers-Briggs personality test for the first time in the class. DSMC had tapes in the media library on communications and I listened to them all. I started reading all the books on leadership that I could

RSHIP

by Judy Stokley

get my hands on. I went at this with the same fervor I had gone at advanced calculus in college.

Since 1992, I have read a roomful of books on psychology, people, and leadership; before 1992, I hadn't read one. I said to myself, "My God, there's a whole reservoir of knowledge out there that I didn't know to tap."

{ I got to this place by learning to trust the people who work with me. }

I always tease the people down at DSMC that they really created me. I became a different person after going there, but not for the reasons they might think—not because I went to all their management classes, but because they launched me on a new path to understanding the meaning of leadership.

I still see a great many people who treat leadership courses as trivial, and they spend almost no time learning how to communicate and how to motivate people. They think the best use of their time is learning how to analyze cost and schedule variances on a project. Honestly, you are going to have a zillion people who can do that. There are going to be far fewer people around to show you how to be a leader. •

Lesson

• True leaders learn from varieties of experience. The best leaders are those who are reflective and willing not only to "learn" from their experiences but to "unlearn" old ways of thinking.

Question

What is something you have "unlearned" during your career that has impacted your leadership style?

THAT VISION THING

It seems to me that people are leaders when they have a compelling vision. They really believe it, and it comes out of them like poems come from the great poets. It's part of their soul, part of how they think about the world. They haven't had a committee get together to write them a vision statement on a plastic card—it is part of their core being, and you can just tell.

When you work for someone like that, you know that her vision is who she is. Every now and then in our lives, we get to work with someone like that. We know where we are headed and that it's got to be a good place or else this person would not be leading us there. So, that is what I think leadership starts with—a person who has a vision that is the core of her soul and beliefs.

—*Judy Stokley,* ASK Magazine, *Issue 9*

GIVE IT TO CHUCK

by Frank Snow

A PRICELESS ASSET TO ANY PROJECT IS THE CAN-DO PERSON. This is the person who can cut through bureaucratic red tape, get a reluctant party to cooperate or obtain the needed widget. As schedules become tight, this person's value only increases, since they seem to thrive on pressure. When I was the Ground System Project Manager for the Advanced Composition Explorer (ACE), Chuck Athas, who had extensive experience with large NASA and DoD systems, was officially my scheduler and planner, but he was also my can-do person.

In the beginning of the ACE project, Chuck, the subsystem managers and I put together an extensive plan/schedule for the ACE ground system. The plan, supported by a large commercial package, provided a detailed three-year schedule to deliver a mission operations center at Goddard Space Flight Center, a data analysis center at Caltech University, a spacecraft integration and test system, support of the payload processing at Kennedy Space Center, acquisition of the data through the Deep Space Network and the ground transport of the data to the NASA centers and nine instrumenters located throughout the world. I thought maintaining this plan would be a full-time job for Chuck, but Chuck just mumbled something about DoD projects, billions of dollars, and asked for additional work. This was the first and last time, I ever questioned Chuck's ability to complete an assignment.

Chuck would do anything I asked—and then some things I didn't dare to ask. All I had to do was put it out there that we had a problem. For example, when people were not meeting a particular deadline, I could send out emails and phone messages and they would conveniently not be around to respond. I could say to Chuck, "Go and find out what's happening," and he would be on it right away.

A Boeing Delta II expendable launch vehicle lifts off with NASA's Advanced Composition Explorer (ACE) observatory on August 25, 1997, from Cape Canaveral Air Station.

Seeing the light

Frank Snow employed the unorthodox skills of Chuck Athas on the Advanced Composition Explorer (ACE) project. ACE launched on August 25, 1997, and has been an outstanding success for NASA. Scientific instruments on board the observatory are studying the Sun, providing researchers back home on Earth with breakthrough knowledge about sun spots, solar wind, and the composition of matter in the interstellar medium. Visit the ACE project page at **http://helios.gsfc.nasa.gov/ace/ace.html** to learn more about the project.

If someone was slacking off or had issues they didn't want to fess up to, Chuck could turn things around just by virtue of his personality. I saw him work this way and it was magical. He never resorted to being confrontational, but boy could he lay a guilt trip on you: "You have to get it done. What do you mean? You're committed to this. The whole program is going to collapse."

It was impossible to argue with Chuck. He would say, "Let me help you. I'll do anything." When someone would say, "I don't have the time," Chuck would come back with, "I'll do it; what do you need done?" "Well, I have to get my daughter out of daycare." Chuck's answer was, "I'll get your daughter out of daycare." Whatever needed to be done, he'd do it for you. Anything.

I used Chuck to keep in contact with a Goddard engineer named Chris. Chris was one-of-a-kind, an absolute genius, and usually spread out over 15 to 20 projects. Chris was helping us to modernize our ground data transport, a critical element in the ground system. The implementation of this system was a constraint to launch. If Chris couldn't solve this problem, then I would be forced to request a launch delay from the ACE Project Manager, Don Margolies.

I would send Chris e-mails, leave him phone messages, try contacting his supervisors—nothing. I can't say that he was definitely trying to avoid me, but he was probably trying to avoid me. Other project managers were more effective acquiring Chris's support. I needed to reprioritize his "To Do" list so that ACE was at the top. I knew that if you could physically get hold of Chris he would do your work; so it was Chuck's job to go over there, get hold of Chris and bring him back to me. I used to say to Chuck, "Find Chris because I absolutely need him," and Chuck would go to Chris's building and search the hallways or sit outside the office door until Chris showed up. I don't know how Chuck convinced Chris to come see me, but he always did.

Chuck was also like the master sergeant in the army (he reminded me of the old TV sitcom, *Sergeant Bilko*) who had the inside knowledge of how to get supplies. Somehow things showed up and nobody understood how they appeared. They certainly weren't coming through procurement. He was trading, I suspect. I know he used up a lot of the little things that we get for projects like decals and posters. One time we needed six or seven headsets for communications on mission simulations. As the simulations approached, they still had not been delivered. I called Chuck and told him the problem, and he got it resolved. To tell you the truth, I didn't know how he got them. And to be honest, I didn't want to know.

Anything that needed to be done—and he didn't care what it was, he would attack with the same gusto and unflappable drive to succeed. Chuck epitomized the concept of team spirit. He would perform any task that supported the success of the project and quickly became the project expert in anything I gave him. Quite often the "little" things in a multimillion-dollar system of hardware and software can bring the system to a grinding halt. I used Chuck to ensure that "little" things never strangled the ACE ground system.

"Don't ask, don't tell." That was the best way I found to deal with Chuck. Was there anything he couldn't make happen? Probably something. But with Chuck on the team I felt like I could ask for Cleveland and the next day he would show up with the deed. •

All I had to do was put it out there that we had a problem.

Quite often the "little" things in a multimillion-dollar system of hardware and software can bring the system to a grinding halt.

Lesson

• A project manager must trust his team. As the overall team leader you must allow team members to take the lead on issues in which they clearly have the expertise to get the job done.

Question

How do you know when a team member should be at liberty to challenge the status quo without asking for your approval?

The Story of JPL

by Teresa Bailey

A FEW YEARS AGO, I ATTENDED A NATIONAL CONFERENCE on knowledge management. Larry Prusak gave the keynote address. He distilled what was important about knowledge management in a single word: storytelling. He went on to say that our most important knowledge isn't in a database and it's not in a computer application; it's in our stories.

As a librarian, I'm aware that public libraries have traditionally been places that provide an opportunity for storytelling, poetry readings and other forms of community expression. It hadn't occurred to me that my library at NASA Jet Propulsion Laboratory (JPL) could serve that same purpose.

One day, I was talking about all of this with Willis Chapman, my division manager, and he finally said, "So, why don't you do storytelling in the library?" I responded, "Well, okay," but I had no idea how storytelling would work in the library, or what it would look like. Not much had been written on the institutional benefits of stories when I started thinking about my storytelling project in 1999. There was no guide to follow, no handbook on how to get things started.

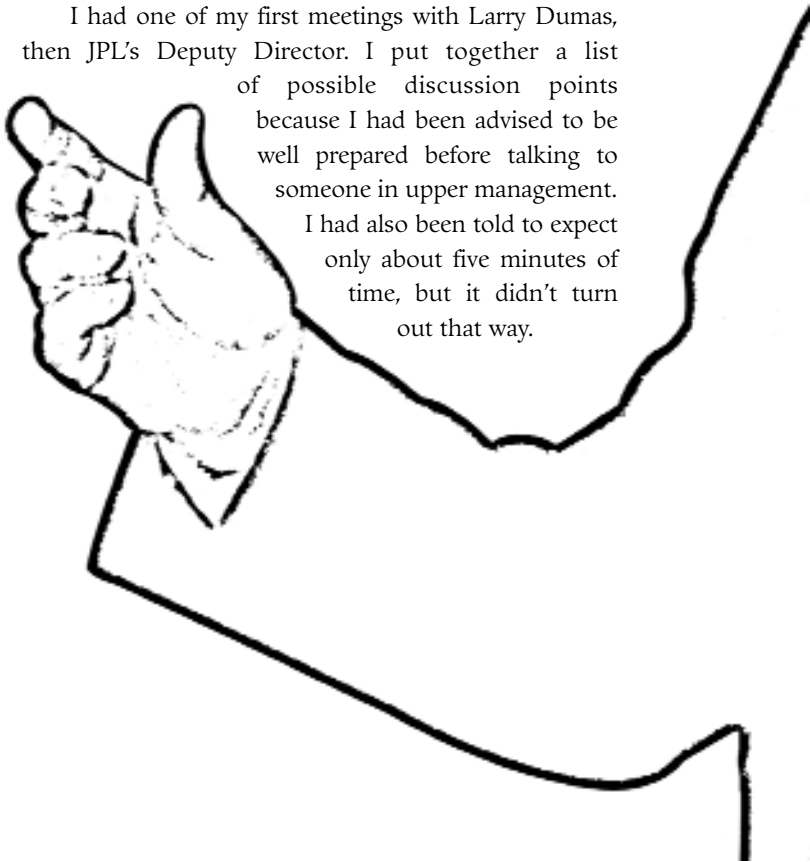
I thought about the idea for a few months, trying to imagine what it would be like to host JPL Stories. Up to that point, I had heard bits and pieces of stories during lectures and talks at the lab. I knew about the pioneering work done at JPL from formal reports and discussions at conferences. What did I hope to capture that wasn't already being expressed? It was personal experience, I realized. Beyond the well-documented specs of a project, I hoped to create a platform for sharing first-hand experience of what it is like to work on a NASA mission.

I decided to set up a few basic criteria. We needed storytellers, that much was certain. But what time would we have our program? And how often? How long would it run? Step-by-step, I figured out that we would have the programs in the late afternoon near closing, when the library was slow. And, even though we're blessed with an abundance of old-timers who have accomplished incredible things here, if we wanted to build community we needed to make our program something that everyone in the community could feel a part of. When I scheduled stories, I would try to mix career types, ages, and levels of tenure.

I put out a call for storytellers in our center newspaper, *The Universe*. No one—not a single person—responded.

I realized that I had been too ambiguous. No one knew what to make of my ad. Storytelling, what does she mean? When people thought about storytelling they thought about reading a children's book in front of an audience; it was hard to make the conceptual leap from that to telling a personal story about a JPL experience. So, I started talking. My plan was to talk to some people in management about the program to try to get more direction on my recruiting effort. Willis Chapman's support was instrumental here in generating interest and gaining buy-in for the program by upper management.

I had one of my first meetings with Larry Dumas, then JPL's Deputy Director. I put together a list of possible discussion points because I had been advised to be well prepared before talking to someone in upper management. I had also been told to expect only about five minutes of time, but it didn't turn out that way.



Stories

"Our most important knowledge isn't in a database and it's not in a computer application. It's in our stories."

Lessons from the past: Dr. William Pickering tells stories from the early years at the Jet Propulsion Laboratory.

PHOTO COURTESY OF NASA/JPL/CALTECH

Our meeting was casual. We went over my list, and discussed ways that I could promote the program and recruit storytellers. Then he told me, "I would like to be your first storyteller." It turned out that he had been kicking an idea around in his head for some time. A lot of his job as Deputy Director dealt with organizational change because we were in the middle of the shift from large missions to faster, better, cheaper, smaller missions. He was responsible for bringing about major changes that disturbed a lot of people, and he found himself thinking about the things that shouldn't be changed—such as core values and work ethics. He knew already what he would call his story: "Things to Keep."

We set up a date. In the beginning, I had a modest budget (today the program has no budget). I used the money to work with a designer to create a "look" for the program. I sent out flyers and posted them, and put announcements in our center papers. I got a lot of feedback: People wrote to tell me that the library was too small, that the time of day wasn't good for people who have to commute, that we should be recording the talks. I even got one crank call asking if we would be serving milk and cookies.

But all that didn't discourage me. I realized that my goal was to reach the community and the community was responding to the program. I might have shaken them up a little, but I had reached them.

"There was no guide to follow, no handbook on how to get things started."

And people came. I was amazed to see more than 70 people show up for our very first program. That wasn't the only surprise. We assumed that the audience would enjoy the stories if we could convince them to come. But we didn't anticipate just how warmly they would respond. People came up to me and thanked me. They told me that the story had given them a feeling of connectedness and belonging.

JPL Stories is entering its fourth year. The series is enthusiastically supported by the library staff and a core team keeps the program on track, including Mickey Honchell, who transforms our space each month, Tony Reynolds who provides multimedia support and Barbara Amago, who helps with programming and stands ready to step in and direct the program if needed.

"I even got one crank call asking if we would be serving milk and cookies."

In the last three years, 60 to 80 people have come each month to listen. We've heard about missions deemed successes and missions deemed failures. Dr. Bobby Williams told us about landing the NEAR spacecraft on an asteroid, and Tom Gavin about "What Could Go Wrong" on a project. We've listened to a parable ("Green Eggs and Ham – JPL Style") that expressed what it's like to be a space discoverer—the struggles and the disappointments, but also the reason to keep going in the face of setbacks. Dr. Edward Stone has told us about his "Journey of a Lifetime" with the Voyager Spacecraft and Dr. William Pickering about JPL's early years. All our programs were stories told from a personal point-of-view, and all were stories that have shared knowledge and experience not typically captured in a formal report.

When I began working on JPL stories, I had to do a lot of selling as I made cold calls to find storytellers. I used to have to go into a long explanation of the program and its benefits to the center. I don't have to do that anymore. On feedback forms circulated at the end of each program, we receive recommendations for future storytellers. When I call someone now to talk about the program, they've invariably heard about the program and are interested in participating.

I like to think that by providing a venue for JPL employees to come together as a community and by sharing the experiences of individuals within that community, we're doing our small part to help make JPL a dynamic, engaging place to work. •

The Audience Responds

What strikes me first is the excitement of seating myself within an audience of JPL workers from all areas of the Lab, coming together for a common experience—to listen, learn and relate. Most of the time I don't know whether I'm sitting next to a former project manager, a library worker, or a relative of the speaker—and pleasantly, it doesn't matter.

The format of the presentations are relaxed, lack technicality, and are often humorous. The audience hears of blunders, or near blunders, on a regular basis. Of successes and near successes. And of competitions we didn't know existed. Most are aware of the science, technology, and mission endeavors, but sometimes we forget (at least I do) that there are human beings driving and enduring these advancements. I'm reminded of that during the stories.

— Rebecca Nash

It's important to know how we got where we are, and it's extremely valuable to hear it from someone who was there. All engineers value hindsight, even if it's only to prevent repeating mistakes. The library's program of JPL stories provides this hindsight along with the anecdotal details that show us what kind of place JPL can be.

I believe it's the stories and engineering explanations from senior engineers that start with "Well, the reason it's this way dates back to..." that have provided me with a sense of the JPL community. It gives me an idea of how much more we should try to accomplish, if we wish to follow in their footsteps.

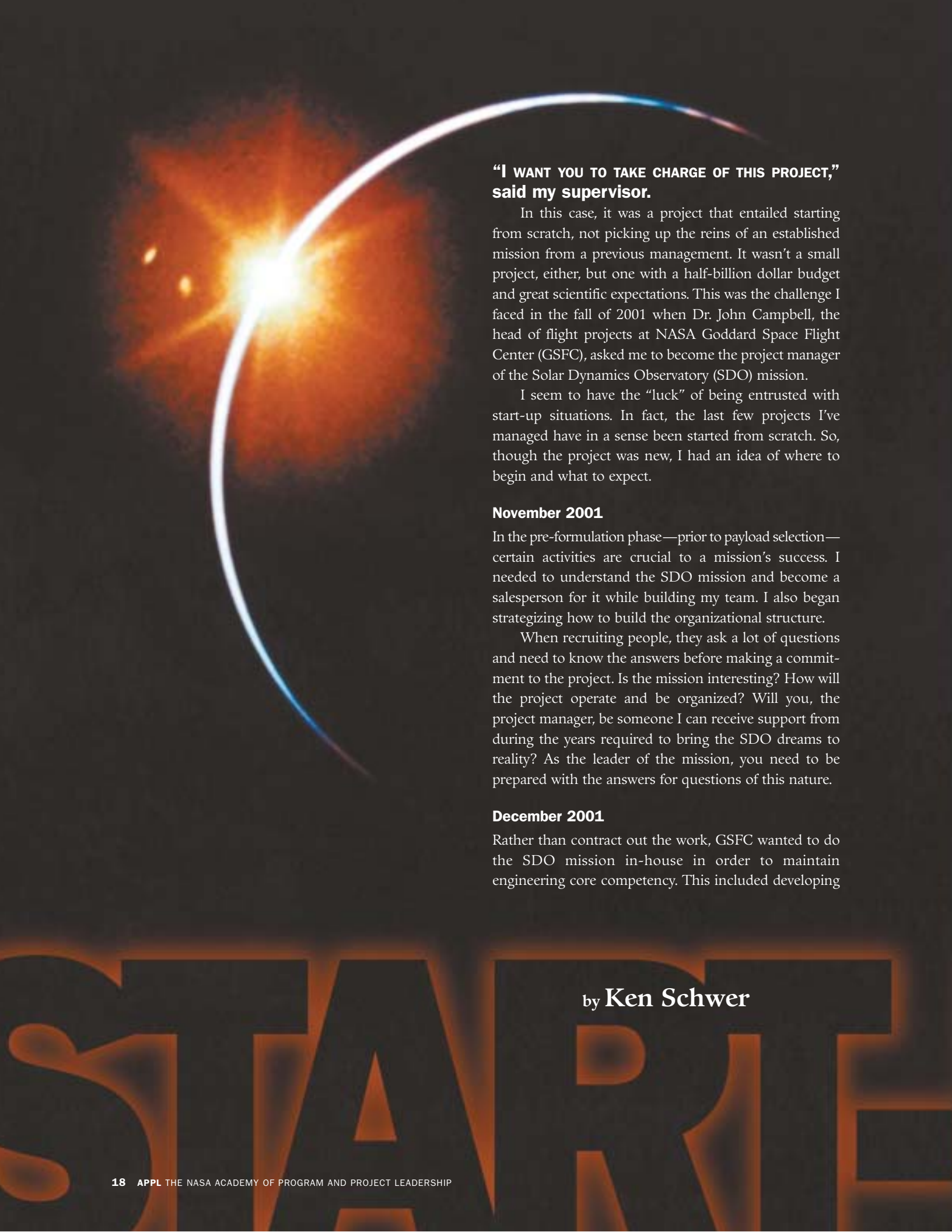
— Scott Bryant

There is something wonderful about going down to a library, sitting with my friends among the books, and hearing a master storyteller weave a tale. Besides being entertaining, it is a great way to learn...the process taps into a crucial capacity the human animal has for imparting wisdom from older generations to younger ones through storytelling.

— Jay Breidenthal

Larry Dumas, then deputy director of JPL, talks about traditions worth preserving at the inaugural session of JPL stories on February 24, 2000.

PHOTO COURTESY OF NASA/JPL/CALTECH



START

by **Ken Schwer**

"I WANT YOU TO TAKE CHARGE OF THIS PROJECT," said my supervisor.

In this case, it was a project that entailed starting from scratch, not picking up the reins of an established mission from a previous management. It wasn't a small project, either, but one with a half-billion dollar budget and great scientific expectations. This was the challenge I faced in the fall of 2001 when Dr. John Campbell, the head of flight projects at NASA Goddard Space Flight Center (GSFC), asked me to become the project manager of the Solar Dynamics Observatory (SDO) mission.

I seem to have the "luck" of being entrusted with start-up situations. In fact, the last few projects I've managed have in a sense been started from scratch. So, though the project was new, I had an idea of where to begin and what to expect.

November 2001

In the pre-formulation phase—prior to payload selection—certain activities are crucial to a mission's success. I needed to understand the SDO mission and become a salesperson for it while building my team. I also began strategizing how to build the organizational structure.

When recruiting people, they ask a lot of questions and need to know the answers before making a commitment to the project. Is the mission interesting? How will the project operate and be organized? Will you, the project manager, be someone I can receive support from during the years required to bring the SDO dreams to reality? As the leader of the mission, you need to be prepared with the answers for questions of this nature.

December 2001

Rather than contract out the work, GSFC wanted to do the SDO mission in-house in order to maintain engineering core competency. This included developing

the spacecraft and ground systems with civil servants and support contractors. Even though GSFC likes to keep one mission in-house for core competency, a good and sound implementation plan is required for NASA Headquarters approval.

Prior to the holidays, the SDO study lead was asked to present an in-house plan to the NASA Associate Administrator for Space Science, Dr. Edward Weiler, for approval. Even though I was new to the scene, I volunteered to finalize the plan and make the presentation to Dr. Weiler. Being responsible for the development of the mission, I felt it was important for me to personally deliver the message. Therefore, I spent many hours preparing for this high level meeting.

On December 20, I gave the SDO presentation; the study lead, Jim Watzin, provided detailed support. The meeting lasted an hour and went extremely well. Dr. Weiler agreed with our approach and gave his approval to proceed. It was a great feeling of accomplishment to arrive successfully at a key, early milestone for SDO.

January 2002

A project manager is only as good as his/her staff, so it was important for me to concentrate on selecting my core team. Since the clock to SDO launch had started, I needed key individuals on board to make progress. "Hand picking" the core team is an important part of establishing a teamwork environment. I wouldn't leave staffing key positions to chance.

I knew that it was important to work with the functional supervisors and not bypass them when it came to staffing. I needed their approval and cooperation if SDO was to be successful. To accomplish this, I spent many hours each week sitting down with individuals and small groups to go over the project and to solicit their support—again and again and again. As a result, I became a better salesperson, and I was able to select my core team with the support and approval of functional management. At this point, there were approximately ten people on the project.

February 2002

The one-on-one meetings were helpful; however, I now needed to get everyone on the same page with respect to the SDO opportunity. Therefore, I conducted an all-hands meeting with GSFC's engineering functional supervisors. Here, I described the mission, organization, challenges, and exciting work that lay ahead of us.

The functional managers left the all-hands meeting with a solid understanding of SDO and the resources needed from their areas. This was important because I was competing with other projects for the same resources.

Of the many presentations I have made at GSFC, this all-hands meeting gave me the "most bang for the buck." My organization grew quickly and this enabled us to further define SDO. At this point, I had filled all core management (science, project, systems engineering, instrument, ground system, and flight assurance) as well as several lead spacecraft and ground system engineering positions, with approximately 25 people on the project.

March 2002

Dr. Barbara Thompson, our Project Scientist, came up with the idea of taking our new team to the Maryland Science Center for a Science Kickoff event. The morning started with the entire team watching the *Solar Max* IMAX film. I now refer to this as "the SDO recruitment film." After the film, a group of solar scientists spent the rest of the day presenting the types of science that SDO will enhance and conducting a question-and-answer session. This energized the team. It was an outstanding opportunity for engineers to understand the science and dreams of SDO.

The SDO team embraced Dr. Thompson's motto, "Get good people on board and spoil them so they never want to leave." To demonstrate the extreme importance of the SDO mission, our customer—the theme director for NASA Headquarters' Sun-Earth Connection (SEC), Dr. Richard Fisher—spent the entire day with us participating in discussions.

Later in the month, the team building continued at a retreat held offsite from GFSC. The SDO systems engineering leads developed and conducted the retreat. The morning was spent bringing the team up-to-speed regarding the guiding principles and challenges for the mission. After lunch, we held roundtable discussions

LOOKING AT THE SUN

Scheduled for launch in 2007, the Solar Dynamics Observatory (SDO) aims to increase our understanding of solar variability and its affect on life here on Earth—from influencing climactic changes to producing geomagnetic storms. The observatory will measure solar parameters and monitor and record aspects of the Sun's variable radiative, particulate and magnetic plasma outputs deemed to have the greatest impact on Earth and its surrounding heliopshere.

Though SDO is the first mission under the Living with A Star Initiative, in some sense it's a follow-on to a previous project. But instead of taking pictures once every 15 minutes (the current rate), SDO will record pictures once every 10 seconds, sending 150-megabites of data to the ground 24 hours a day, seven days a week. For more information about the Solar Dynamics Observatory, visit http://lws.gsfc.nasa.gov/sdo.htm

that focused on requirements, initial concepts and architectures, implementation options and instrument challenges. Like the Science Kickoff, this event provided an opportunity for collaboration.

April 2002

I took my core team to NASA Headquarters for a pre-formulation status meeting with our customer. The purpose of this meeting was two-fold: introduce and provide exposure for my team, and show our customer the outstanding work and progress we had made in such a short time. This meeting planted the seed for establishing good communication channels and working relationships with our customer. At this point, all key subsystems were in place, and we had approximately 45 people on the project.

May–July 2002

NASA received instrument proposals and my team reviewed them for spacecraft accommodation assessments. In June, my core team was invited to the NASA Langley Research Center where we participated in discussions with the technical management panel responsible for evaluating the instrument proposals. We were able to listen to their comments and offer our own insights.

Once we completed our instrument accommodation study, we presented our results to our customer. Involving the project team during this process was beneficial for all. We learned about potential instruments and we were able to provide insight to our customer.

August 2002

The moment arrived: the SDO instruments were selected, and we were off and running. Eight months into the project, we were ahead of most projects our size at this phase. We were already highly organized with an experienced and focused team.

> Get good people on board and spoil them so they never want to leave.

Project teams are often pulled together around the time of instrument selection. By this point on our project, the complete SDO formulation team was in place—approximately 70 people, plus our instrument organizations. The team felt pleased with their progress and our customers were more than satisfied. (They have since recommended our process as a model for other projects.)

We officially launched the formulation phase, knowing that next few years would be busy with many ups and downs, surprises and challenges. This is project life. •

Lessons

- Spend your greatest efforts early in the project on identifying and recruiting the most suitable candidates for your team.
- Building a team is done simultaneously with formulating the requirements and selling the project.

Question

How do you cope with situations on a project where your influence on selecting the most suitable people is limited?

BACK TO BASICS

BY DR. OWEN GADEKEN

Several years ago, I was leading a team-building workshop for an Army program office at Aberdeen Proving Ground, Maryland, and I had divided the group into five-person teams to compete against each other in a desert survival simulation exercise. The purpose of the exercise was to stress the importance of up-front planning and teamwork in successful project management.

I carefully watched the groups as they held their initial planning meetings before starting off across the simulated desert. One of the teams caught my eye since it seemed much better organized and more team-oriented than the rest. This team rapidly chose a leader and then subdivided the remaining tasks so that each person had a meaningful role. They had a high energy level with all team members participating during the planning meeting. I confidently predicted (to myself) that this team would achieve the highest score on the exercise.

One of the tasks confronting each team in the exercise was to calculate and then purchase the supplies they would need for their desert journey, allowing for contingencies such as extreme heat and sand storms. As the groups started out, I kept my eye on my "favored" team. I was quite surprised when midway through the exercise, they ran out of supplies and "died in the desert," achieving the lowest score of the teams competing.

In the debriefing, I discovered that this team had no members with mathematical aptitude, so they had only made a "rough guess" at their need for supplies. They had a smoothly functioning team but were incompetent to perform one of their required tasks.

I then had a flashback to the last Air Force missile development program I worked on before making my career change into project management training. As a branch chief in that program office, I had mid-level military and civilian team members working with me, each with several years of experience in their field. On a return visit to the program office a few years later, I was shocked to find a very junior officer as the branch chief with young lieutenants and recently hired civilian college graduates making up the team. The team's enthusiasm was excellent—but their experience was minimal.

> **"THE TEAM'S ENTHUSIASM WAS EXCELLENT—BUT THEIR EXPERIENCE WAS MINIMAL."**

This same scenario is repeated again and again as our organizations lose their most experienced people through downsizing and early retirements, and then attempt to compensate by creating teams of newer and less experienced replacements. The trouble is that technical competence and specialized experience are often very hard to find and recruit in a competitive job market. Such experience also takes time to develop within the organization.

Basically, experience counts. We need to accept the significance of that statement, and act on it. It's one thing to discover the need for expertise through simulated deaths in a simulated desert—but when it comes to many government projects, it's often real lives that are on the line. •

Lessons

- Before embarking on a new and challenging project, make sure you have the "basic building blocks" of expertise in place. It takes good, technically competent people to get a good product from a team.
- Project organizations must be proactive in recruiting and developing the specialized expertise they need to stay at the cutting edge in their field.

Question

How can you be sure your team has the expertise it needs to succeed?

THE CALCULUS OF COOPERATION

Teaming is so common in today's project management environment that most of us assume it comes naturally. We further assume that when presented with meaningful and challenging work, project teams will naturally engage in productive activity to complete their tasks. This assumption is expressed in the simple (but false) equation: Team + Work = Teamwork. Although this equation appears simple and straightforward, it is far from true for most project organizations. Simply stated, most teams are dysfunctional by nature. To overcome these restraining forces and use the potential power of the team, greater emphasis must be placed on establishing and maintaining group cohesiveness. This relationship is expressed in the revised (true) mathematical equation: **Team + Work (on the Team) = Teamwork.**

—*Owen Gadeken,* ASK Magazine, *Issue 7*

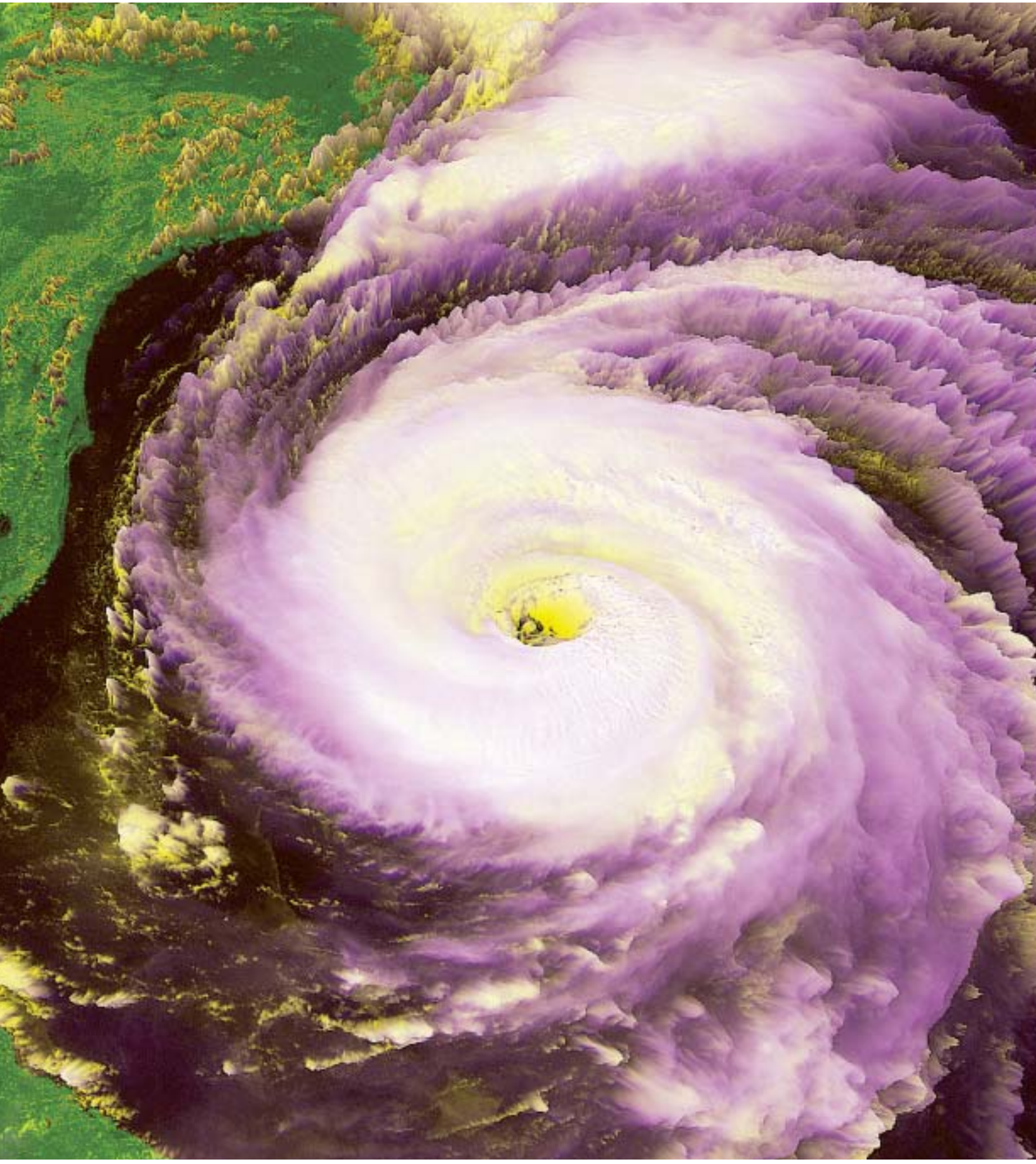
SCHEDULING IN THE REAL WORLD

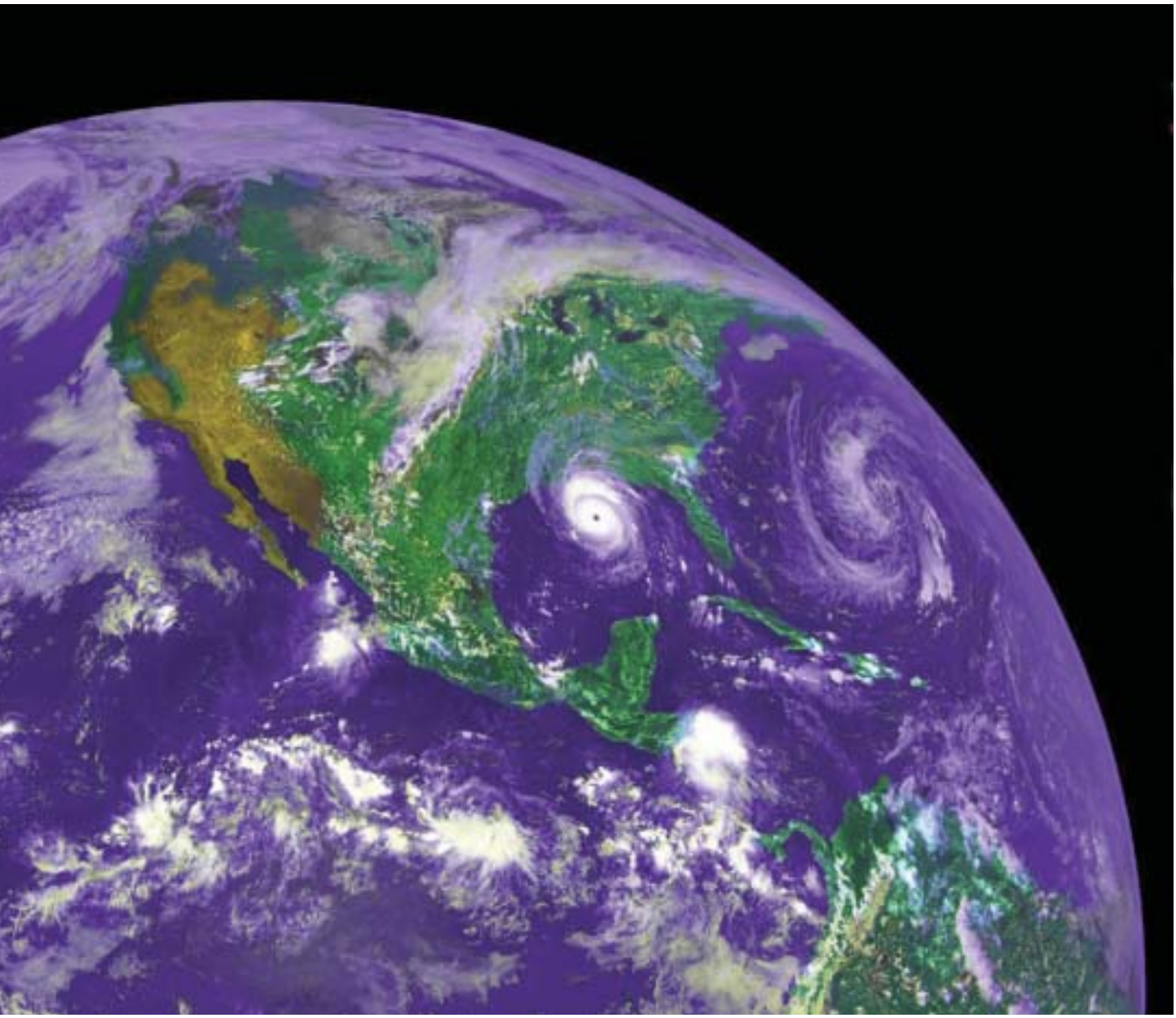
BY MARTY DAVIS

A DECADE AGO WHEN I CAME TO THE GEOSTATIONARY Operational Environmental Satellite (GOES) program, we had one limping spacecraft, plus a satellite rented from the Europeans. I had to start by assuming, essentially, that we had no resources in orbit.

GOES is by no means an inconspicuous program. Every night when you watch the weather on the evening news, you see GOES satellite pictures. My customer, the National Oceanic and Atmospheric Administration (NOAA), requires two operating satellites, with a spare ready to be put into operation when an existing satellite goes out of service. Clearly, we needed to build our first two satellites and get them launched as fast as we could. There was money available, and a contractor lined up to do the work. Easy so far, from a scheduling point of view: Build the spacecraft and launch it.

Keeping an eye on the storm:
GOES weather satellites capture an image of Hurricane Fran as it begins its destructive journey north along the East Coast in 1996.





But what do you do when events beyond your control dictate when you launch a spacecraft?

Back in those days the people who built launch vehicles were doing a lot of launches. Thus, we expected long launch queues. The idea of launching a spacecraft the moment it was needed didn't seem very realistic. In addition, storing a backup for extended periods of time seemed too risky. There were certain detectors that we couldn't check at room temperature; we would have to go back in the thermal vacuum chamber. How long could we have a spacecraft out of thermal vac and still have confidence that it would work when launched? We didn't know, and it made us nervous to think about putting things in storage for two or three years, then trying to get hold of a thermal vac chamber, then hoping to fit into a launch queue.

So, I sold my customer on the idea of having an on-orbit spare. That meant I could build the third spacecraft and launch it as soon as it was ready. We built the first two as fast as we could, and then tailored the third one to when we wanted it to pop out and get ourselves in the launch queue. Thus far, we are still talking about a fairly easy scheduling scenario.

We assumed one failure out of every five spacecraft; one of the five satellites budgeted was for insurance. In the end, all five succeeded. We never had that launch or spacecraft failure. The second spacecraft had trouble with a momentum wheel and we took it out of service after three years—two years short of its expected operational lifetime. On the other hand, the one we launched in 1994 still operates.

WATCHING THE WEATHER

Flash floods, hail storms, tornadoes, and hurricanes—all severe weather conditions worth keeping an eye on. Since 1975, NASA has produced that eye for the National Oceanic and Atmospheric Administration (NOAA). NASA's latest series of geostationary operational environmental satellites (GOES) provide high spatial and temporal resolution images from a vantage point of 22,300 miles above the earth, as well as full-time temperature and moisture profiles of the atmosphere. Together, two satellites produce a full-face picture of the earth, 24 hours/day. For more information about the GOES project, visit **http://goes2.gsfc.nasa.gov/**

Things began to get complicated as money became less available. Isn't that how it always is? To save $4 to $5 million dollars, we launched a spare earlier than planned, so that we could reduce the number of contractors. It left us with two on-orbit spares. How many spacecraft are you going to have on-orbit before you get criticized for having too many? But we also worried about experienced people being available for the launch, and we were right to be concerned in this regard; thousands and thousands of people have been laid off in the aerospace industry in the past 18 months.

What else did we have to figure into our scheduling? To put it simply: fuel. Eventually, a working satellite runs low on fuel and its usefulness as an operational spacecraft diminishes quickly. We have to retire the satellite or use it for some other function where it is not mainline operational. How long will these satellites continue to perform? Will they go all the way to fuel depletion? I don't know. But you look pretty funny trying to take one out of service that is working well, and you would look even funnier if you put too many of them up and used up their lifetimes orbiting as hot spares.

All this comes into play in the way you schedule the effort to build a spacecraft, to store it on the ground, and then to put it in orbit so that you get it up there before you need it—not knowing when you're going to need it. It's a guessing game and the best you can do is to try to balance all the resources. Here's the average timetable we work with: five years ground storage, two years on-orbit storage, five-year operational lifetime. But what lifetime do you use for a planning schedule? Is it the five years? Or is it an estimate of fuel depletion?

Sometimes you make a schedule that you use for budget purposes to get the money you need, assuming the five-year lifetime, and then anything you get beyond that is gravy. But do you get accused of lying to Congress or Office of Management and Budget when you do that? That's something we face as we do schedules for an ongoing program like this. NOAA can no longer go back and say, "This is what we need," and get all the money they need for satellites because Congress says, "Look, they're working fine. You've solved your problem." Congress isn't planning as far ahead as we need to. If you want to look at a long-term program, this is it. We have launch dates slated through 2021.

What I want to get across here is that when you get a multiple-unit situation like we have in satellites, and you have something like on-orbit performance to evaluate, the scheduling becomes complicated and it requires ongoing attention in order to make adjustments for changing situations.

Periodically we evaluate the health of the on-orbit assets and revise our schedule as necessary. When we make revisions, does it appear to an outsider that we don't know what we're doing? Yes, is the answer. I call this "scheduling in the real world." •

THE IDEA OF LAUNCHING A SPACECRAFT THE MOMENT IT WAS NEEDED DIDN'T SEEM VERY REALISTIC.

Lessons

- Balance best- and worst-case scenarios when scheduling. This may make scheduling more complicated, but it will yield a more realistic, sustainable project timetable.
- If established approaches aren't likely to achieve desired results, challenge the status quo and be willing to take calculated risks.

Question

How have you planned for uncertainty on a project?

Speed Merchants

A CONVERSATION WITH W. SCOTT CAMERON AND TERRY LITTLE

We're all interested in quality, but if we can't deliver a project on time, quality becomes a moot point.

The subject of speed came up at NASA's Masters Forum of Project Managers held in Tysons Corner, Virginia last August. During a panel discussion about planning, Scott Cameron of Procter & Gamble and Terry Little, then head of the Air Force's Center for Acquisition Excellence, discussed approaching projects with speed as the primary focus. In this excerpt, Scott and Terry share examples of how speed affects the way they manage projects in their initial phases, and they suggest why speed might be important in how you manage yours.

We invite you, after reading these excerpts from the panel, to tell us about how you address speed on your projects.

ASK: Let's start with the obvious: why the emphasis on speed?

CAMERON: In the Consumer Products business, being first to the market or hitting a defined marketing window with a quality product requires us to always look for ways to improve or reduce our execution schedules. As such, we're often called "speed merchants."

LITTLE: I have found that when you establish speed as your single focus, you go back and look at how you do business with a clean sheet of paper. It's not hard to understand why speed counts when it comes to national defense. In the Air Force, we have a fairly structured system of procurement, oriented towards not making a mistake. We have a highly detailed, highly structured proposal evaluation for most big projects that typically lasts, give or take, a year. On a few of my projects, we have found ways to cut the yearlong process down to as little as 3 or 4 weeks. How can we accomplish that? Looking at our requirements in capability terms, not specific numbers, is part of the solution. We tend in the Air Force to be too detailed in requirements. Yes, there are times where speed isn't as critical or you take what you can get—however long it takes, that's how long it takes. But I would judge that for the vast majority of projects, speed really does count, even when it's not explicit. The key is this: When you have a single-minded focus on something like speed, it encourages creative, innovative thinking.

CAMERON: I would just reiterate that. One time when I began work on a new project, we benchmarked similar projects which indicated the best schedule we could anticipate achieving was 24 months. Our marketing window was only 17 months to execute the project. We aligned the team to do it in 17 and they accomplished the task.

ASK: Those are clearly impressive results. How do you get a team to "align" like that?

CAMERON: I think Terry's point says it all, as the schedule was the single point of focus. The project manager also took the time to align all the factional team members and their hierarchy, as well as our contractors and suppliers, to this importance of speed. He also worked with the team and hierarchy to determine the cost impact of going this fast.

Our ability to achieve this schedule was threatened throughout the duration of the project. However, I've found that when you make it clear to someone that they have become the critical path, the reason a project will succeed or fail, then they begin to come up with very creative solutions that they probably never realized existed. Sometimes it comes down to asking, "Can you meet this schedule?" and "Will you put your career on the line?" Then the answers you get back are far different than the norm. Then a team aligns, and it decides to challenge the traditional barriers.

LITTLE: Everyone has to share the common goal, speed, and it has to be a goal that drives their behavior and their contribution. Focusing on one issue, such as speed, comes down to deciding what you're not going to do. You can't expect a contracting officer who is wedded to "let's avoid any sort of protest from the contractor, let's make sure that we've got a fireproof contract" to work that problem and the speed problem at the same time. It won't happen. So you've got to

have, as an essential element of a functioning team, a shared, common objective—speed, we'll say—for which everyone accepts accountability. Without that, you'll never get anything from the engineer, from finance, from procurement, from the lawyer, and so forth, because they each have a different objective. You can call it a team, because you happen to work in the same location or you are on the same work chart, but it is not a team if every single member of the team doesn't share a common objective.

ASK: How is quality affected by a focus on speed?

CAMERON: There are tradeoffs. The big three when it comes to a project are cost, quality and speed. They're all negotiable. If speed is the most important, then the question is: what does that do to cost, what does that do to quality? From a consumer product standpoint, putting a lousy product out there fast means you're going to fail in the marketplace. So, if quality is the number one vector, then how do you balance cost and speed? Again, it's all negotiable.

Some of the biggest obstacles I've faced in managing a "speed" project are the technical engineers and their desire to have everything perfect from day one. They'll say, "We just need a couple more days." But a couple more days could be critical if you're trying to hit a marketing window.

Sometimes you may not need perfection. Like I'll pick pet food. Do dogs and cats really know what the container looks like? Do they care? It's what's inside that pets care about, but when you go through market studies, it's always: "What's the quality of the container?" Maybe you won't have the perfect container if you go for speed; maybe you live with something secondary and then six months after your product has rolled out, you come up with a new and improved container.

Quality is the most important aspect of any project. If you put an inferior product into the marketplace it will fail. But, like anything else, there are probably more negotiations on those three—cost, quality and speed—than you give yourself credit for.

LITTLE: I think it's important to clarify that speed isn't necessarily the preeminent concern of every project. But when speed is critical, it's important to have a clear set of priorities in order to decide what does and doesn't require the attention of your team. There is a misconception, I think, that if you emphasize something like speed or like cost, that everything else goes in the toilet—that if you focus on speed when you're developing a car, you'll deliver a lemon in the end. My observation is that people working the problem won't let that happen; that what you give up is very modest in comparison to what you gain.

When you have a single-minded focus on something like speed, it encourages creative, innovative thinking

What you've got to do, I am convinced, is to "unlearn," to use Alex Laufer's term, all of our processes that are not oriented toward speed or credibility, but are oriented toward not making a mistake, playing it safe. When you take on a problem, there is plenty of room out there for all kinds of extraordinary alternatives that will both increase speed and increase credibility. There really are. We have seen some of those work.

ASK: Could you give an example?

LITTLE: A lot of our processes that we have, both procurement and post-award, are built on lack of trust. That's essentially what it is. When you hand somebody an 11-page specification rather than a 100-page document, however, you are sending a clear signal that you trust them to do the right thing. In general, we don't do that because we don't trust, or the system won't allow us to trust; I'm not sure which. But my own belief is that, as an individual project manager, you can go a long way in that direction by starting not with the notion that someone has to earn your trust, but starting with the presumption that they're trustworthy until proven otherwise. It allows things like an 11-page specification.

My biggest disappointment in the past has been when I have given project managers the opportunity to innovate, and they don't know what to do with it. They demand processes, rigidity, templates, and prescriptions. It is as if you give them a blank check and they write it for a dollar.

CAMERON: To come back to your question about an example, one type of project comes to mind: site clearance. Unfortunately, we have had a few brands that haven't made it and we have had to clear out everything we've put in. Site clearance to me is pretty simple. You walk in the room, you see the equipment making the product, and you say, "Here's my spec: I want all of that gone," and you're ready to bid the job. Somebody might accuse me of oversimplifying it, but that's pretty much what you want done. The interesting thing is, when you go out and you ask people to write the site clearance specification, it comes back 400 pages long. I think Terry's point is right on: often what's required is unlearning of old thinking. If speed is your priority, you should approach the job differently.

ASK: How do you address risk in a speed-first approach?

CAMERON: There's one thing I always tell people when they're managing a speed project, and that is to remember "speed kills," too. The project manager must understand where the gas and the brake pedals are located as the project is executed. The project manager has to have the experience to use the proper pedal because there are times when speed can kill a project. Not every portion of a "speed" project has to be executed as fast as possible, thus the project manager must understand how and when to operate each pedal.

LITTLE: I think in the Department of Defense one comment I hear frequently is that you get the behavior from project managers that you reward. I don't know about NASA, but if you want project managers to be risk-takers in the sense of taking a modest risk to achieve an extraordinary gain or an extraordinary improvement, then the system is going to have to be rewarding of that behavior.

CAMERON: I had one project where I thought I was going to be appointed the project manager. It turned out it was a five-site rollout. You had 26 weeks to start up the fifth site. The first site had to start up week 18. We hadn't ordered any equipment. We weren't funded, but the end date had been set. We only knew two of the five sites. Aside from those "minor details," it was a fairly defined job. I'm joking, of course.

I went in to my boss and expected him to say, "We want you to be the project manager." What he actually said was: "We want you to be the project manager but you have to answer one question: Will you stand by your decisions?" Because this was an extremely aggressive schedule, there was no time to second guess my decisions or even take significant time to make decisions. I had to deliver a quality product—let me be very clear about that—I couldn't put swill out there and meet this schedule. At the end of our discussion, my boss said, "I will give you a night to think about it." It was as though that was the only criterion—my willingness to stand by my convictions, because I had to drive speed. In that job, the project manager was going to be rewarded for speed.

So Terry's point is well made: you are likely to get exactly what you reward. If it is complacency, if it's status quo that you reward, then that is what you are going to get. In this job, I would be rewarded for quality and speed. And I delivered it.

There's one thing I always tell people when they're managing a speed project, and that is to remember "speed kills," too

LITTLE: I will offer just one more thought. I just completed an informal, non-scientific assessment of a few successful Air Force programs, big ones. At the root of every one of those programs there was one element in common, and it wasn't adequate funding or stable requirements or good systems engineering. The common element was a program manager on the government side who challenged the status quo, took risks and persevered. It was a project manager who was a leader. •

PERT Charts Take

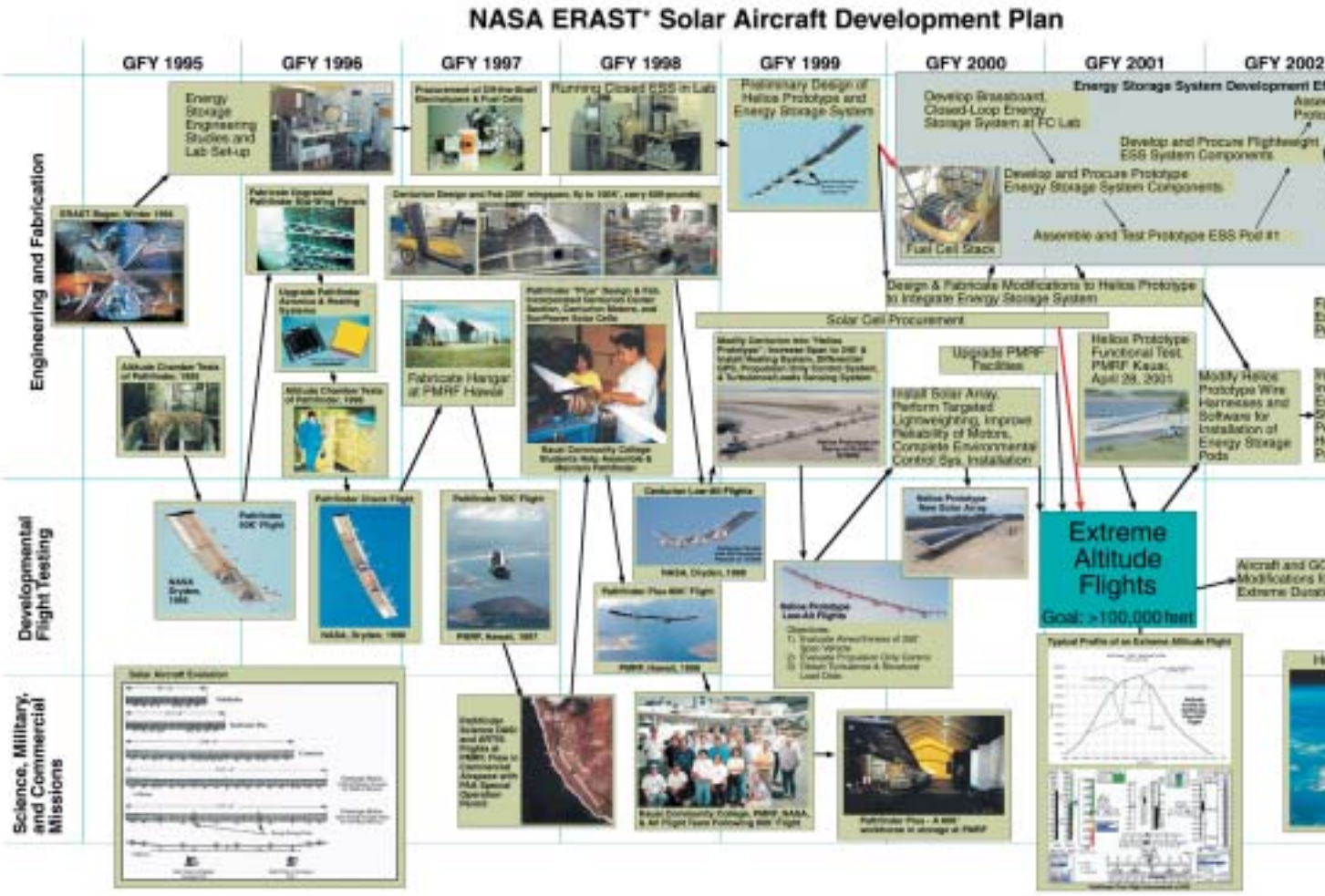
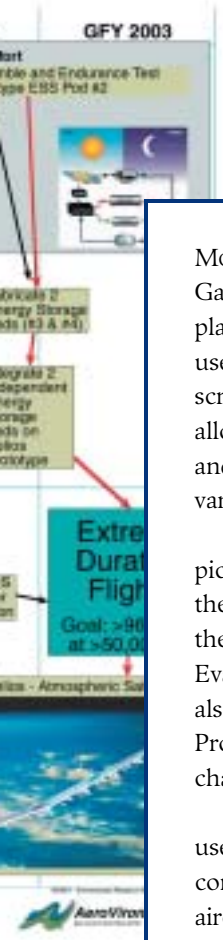


Figure 1

Managers have to effectively communicate people's roles in the overall project. In fact, this is one of the primary jobs of a project manager, and most of the tools available for project management are really forms of communication

Precedence



Most program/project and task managers use the Gantt chart format for their graphic display of project plans and actual accomplishments. It is a simple tool to use, and displays a lot of information on a computer screen. Most modern, commercial computer programs allow one to show interdependence, resource allocation, and roll-up of tasks and subtasks on the Gantt chart, at varying degrees of clarity.

From the standpoint of communicating the overall picture of what needs to be done, when and why, to both the project team and our customers, however, I've found the PERT chart to be better. PERT stands for "Program Evaluation and Review Technique," but the charts are also called "network diagrams" and "precedence charts." Probably, the latter terms are more descriptive of the charts' functions.

In our solar aircraft development program, we used two types of precedence charts extensively for communication of program/project plans. The solar aircraft development was a part of the Environmental Research Aircraft and Sensor Technology program (ERAST), managed by NASA's Dryden Flight Research Center. A top-level program chart, spanning eight years, is shown in ***Figure 1.***

This type of chart was extremely useful for communicating the overall program milestones leading to the end goals. It shows the Level II project elements that make up the overall solar aircraft program. Creating the chart on a simple computer drawing program, rather than using project management software, allowed us to use representative graphics prior to an event actually occurring and to insert digital photographs of events as they were accomplished. Since it was updated infrequently, the automated features of a canned project management program were outweighed by the value of flexible use of graphics. Also, most automated PERT chart programs do not show a time scale.

Having access to a large, color plotter enabled us to make banner-sized depictions of the program and place them on the walls of our shop and hangar for all the team to see. The chart was much more than window dressing, as we often referred back to it in team meetings to help redefine the importance of a current task and to see how it fit into "the big picture." This became a very valuable tool for the team.

With pride, we saw blocks filled in with actual pictures of our accomplishments (as well as programmatic re-adjustments when necessitated by problems). Enthusiasm for accomplishing the next goal was reborn each time we looked at the graphics on our wall. The fact that these charts were actually updated, and did not just become faded wallpaper, made them more evocative to the team. What's more, this top-level view of the program was invaluable in "selling" the program to our customers in the Agency food chain, as well as members of Congress and the public at large.

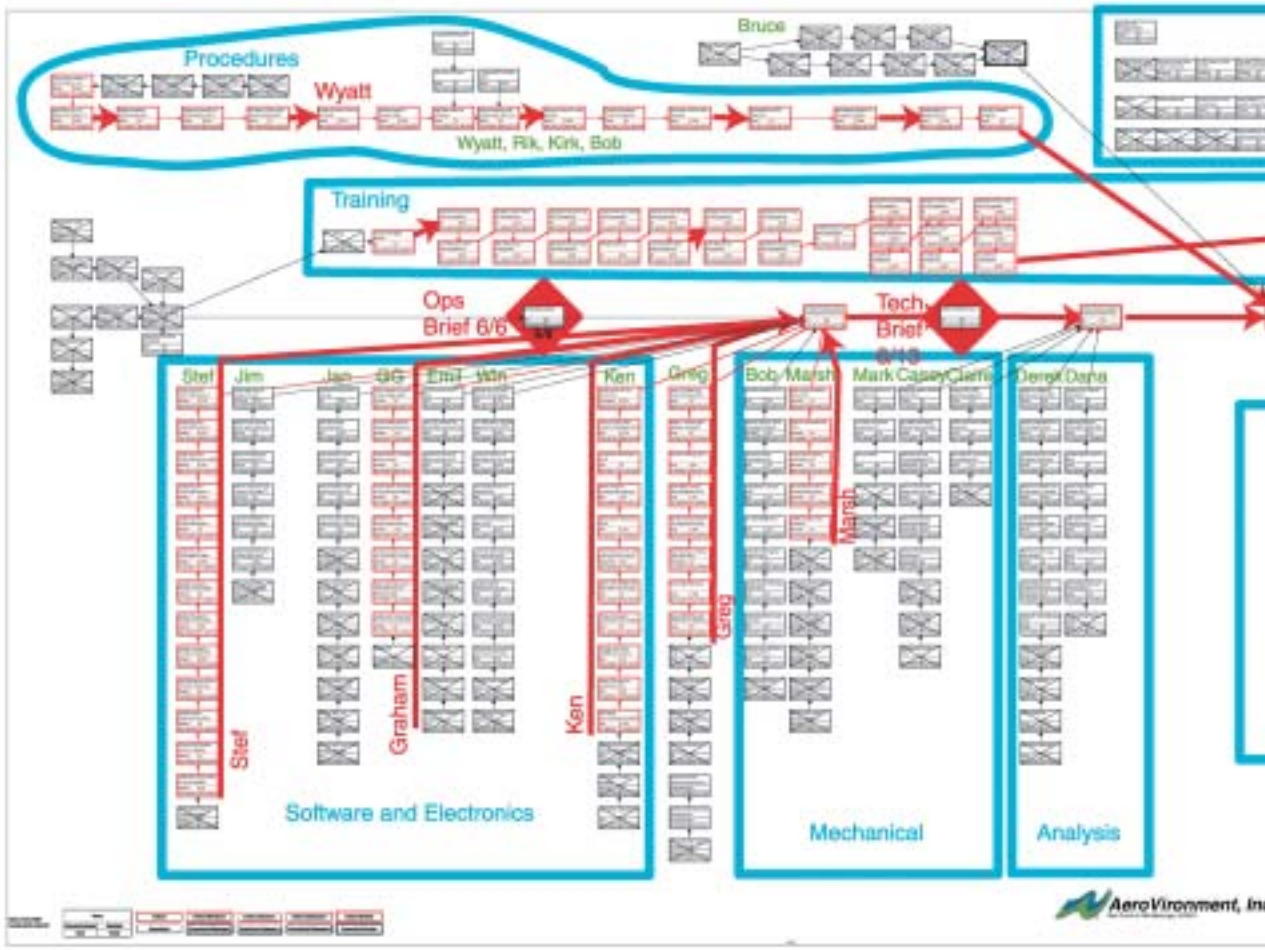


Figure 2

Figure 2 illustrates the use of the precedence chart at a working level. This particular example shows the chart as used in the field with the Helios flight test team during our attempt to reach 100,000 feet above sea level in 2001. This chart goes down to Level IV from a program standpoint (Level III from a project view). While much of the effort to organize the precedence chart is manual manipulation (when using typical project management software that runs on a desktop computer) and requires some "grunt work" on the part of the manager, this manual approach provides more flexibility in organizing the chart in meaningful ways.

This same chart also illustrates how the project manager can group tasks to the next higher level (see the large blue outlines), such as procedures, software, etc. In addition, the key milestones are evident within the red diamonds (ops brief, tech brief, etc.). The task manager for each set of sequential tasks is shown in green letters at the top of each string of tasks. The software automatically calculates the critical paths (shown in red), and the responsible persons for tasks on the critical paths have their names shown clearly in

Riding High

TOM TSCHIDA

"Before too long, solar aircraft will be capable of subsonic flight in the stratosphere. A new industry is on its way," says Ray Morgan—and he should know. Morgan has been a pioneer in the development of next-generation aircraft since the 1970s. He has been integrally involved in NASA's efforts to develop sustainable solar-powered aircraft on the Pathfinder and Helios projects (Helios is pictured on the cover this issue). According to Morgan, the NASA Environmental Research and Sensor Technology (ERAST) program is successfully developing a new type of propulsion for aircraft, one uniquely appropriate for the 21st century. Soon, because of this program, many missions now requiring rocket launches or jet aircraft will be accomplished more economically in terms of dollars and environmental impact.

red as well, to emphasize their situation to the team. We were able to show a group of "Nice to Have" tasks in the lower right corner, which would be worked if people became available.

In essence, a complete virtual model of the project is shown in one large sheet, and it is much more meaningfully organized than if we had just printed out a large Gantt chart with several hundred items listed sequentially. This model allows the project manager and subordinate task managers to visualize and formulate plans, and see graphically how they work.

We put our chart on the side of a large container right in the hangar, next to the flight test crew and the airplane. When posted, it becomes a valuable, graphic depiction of the work plan, interdependencies, milestones and people on the critical path (as well as which ones may need help). It also allows the team to mark it up interactively, adding tasks that come up when necessary and crossing/signing-off tasks as they are completed. We usually incorporated these changes into the computer model and reprinted it once or twice a week during flight tests.

In summary, the PERT or precedence chart (a.k.a. network diagram) provides both a virtual model for project and task managers to refine their plans as well as an excellent graphic depiction of the plans and project status to the team and their customers. It is more work than the standard Gantt chart, but it is extremely helpful in the effective execution of the project. The precedence chart graphically clarifies the plan, and allows team members to see themselves as integral to the project. •

ASK Talks with

Cathy Peddie

Cathy Peddie is Assistant Manager of the Ultra Efficient Engine Technology (UEET) Program Office at the NASA John H. Glenn Research Center in Cleveland, Ohio

UEET IS A NATIONAL PROGRAM TO DEVELOP THE CRITICAL technologies for low emission propulsion systems whose results will be used by the U.S. aerospace industry for further development of the next generation of turbine engines. Ms. Peddie has also been a project manager for high mach turbine efforts, and for several microgravity experiments on the Space Shuttle and on the Space Station Freedom. Prior to coming to NASA, she served in the United States Air Force as a Flight Commander responsible for supervision and mission direction of a 12-person crew. She was responsible for the command of three $55-million satellites and a $1-billion ground station. She was handpicked to bring online a new satellite operations center in 1989 and helped establish the first operating procedures.

Ms. Peddie enjoys being a mentor for the Women in Engineering Program at the University of Akron, a mentor for the NASA K-12 program and a panelist for the Women in Science Program at Cuyahoga Community College. She is a native of Makakilo, Hawaii, and in her spare time enjoys oil painting, golf, kayaking and yoga.

After years as a project manager, you're working now as a deputy program manager. Was that an easy transition to make?

When I accepted my current job, my boss told me that I would notice a big difference between project and program management. Honestly, I thought that he was full of bunk. How different could it be? But after a couple of years, I would say that he was absolutely right! Working on the project level, no matter how large the project, I was able to focus on a particular area; I never had to worry too much about the bigger picture. Now as a program manager, I always have to worry about the big picture.

What does 'big picture' mean in your case?

You know the classic definition of project management: balancing cost, schedule and technical issues. I never realized that programs have a fourth dimension, which is politics. There are the typical politics between different organizations, whether they are NASA centers, divisions, branches or whatever; and there are politics, I think, in the classical sense of dealing with Congressmen and Senators, with Headquarters and how Headquarters deals with OMB and Congress. I'm also aware now of international politics—the politics of how our country deals with commercially sensitive technologies and

international security. Our program is highly visible. We often get singled out in a Congressional line item. We'll get calls from the offices of a Senator or Congressman, and I have to be aware of the heightened sensitivity to those types of phone calls and questions that we get asked.

We're talking about airlines and airplanes here. When people think of NASA, they think of space. Does it ever surprise people that your work focuses on aircraft engines, rather than spacecraft?
Actually, NASA's roots are in aeronautics, not in space. We didn't become the space people until the 50s. Having worked on the space side, I know that space generates excitement. People automatically think, "Oh cool, astronauts." When I talk, instead, about aeronautics, they assume my work can't be exciting. In fact, I had someone tell me once, "Well, let's face it. Turbine engines are boring. There is nothing sexy about them."

Is that perception a problem, when it comes to getting support for your work—from Congress and within the Agency? Is it something that affects the way you work?
Oh, yes. We're working on that perception, at least in our program office. We have a very aggressive outreach effort. We have "Engine 101" information online and, for kids, a little character that looks like a turbine engine. It's our fun way of trying to teach the public about engines.

When people point out that aeronautics is a "mature industry," our challenge is to show then why we need to continue our research in technology. Here's a personal example of that: my mom. I love my mom, but my mom couldn't care less about a turbine engine. Recently, she found out she has the start of a cataract. I pointed out to her that our program focuses on emissions reduction, which helps the ozone layer. I explained to her that my work on turbine engines could reduce the number of cataracts in the world. That stunned my mother. Attempting to talk about our work at a level that an individual can relate to is very important in our office. We always try to do that.

I know that you do a lot of outreach work for the program. Is that something that comes naturally for you?
I actually started doing things like that in my community long before I came to NASA. So, when I came to NASA and realized there was a speakers' bureau and mentorship programs, I got involved because I love to talk to people, especially kids. These were all things that I did in my personal time because it always jazzed me. There is nothing more exciting than having someone come up to

you and go, "Wow, what you do is so cool." You know, if you speak their language, if you talk with them on their level and skip the lecture on turbine engines, I think that actually helps them to understand. Whenever I would speak at an event, I would have adults come up to me and say, "Oh my God, we need more role models like you. The kids really listened." I never considered myself a role model, but I have realized that if you can tell a young person what it is really like to be an engineer, there's a better chance they'll consider going into math and science.

You've told us about communicating your mission to people outside the program. How about within a program? You're currently deputy assistant manager for two programs. How much communication exists between the various projects you oversee?

When I first came to the UEET program, the projects were like separate islands; they didn't speak to one another. Somehow we had to figure out how to get the islands to come together into a single continent. Why does this matter? Well, when you're under a tight budget, and one project manager spends all of the money, it's a significant problem for all the other projects involved. You can't have people saying, "Oh, I didn't know that my colleague over there needed money."

Yes, we hire project managers to look out for their projects. That's their job. But my job is to look out for the health of the overall program. I have to figure out how to convince these project managers that they need to cross boundaries. I need to convince them that, in the end, it's in their own best interest to communicate and cooperate. I think we have moved the islands closer together, but they certainly are not one voice.

What have you done to work on the problem?

One thing we've tried is holding off-site retreats where we put teams through physical situations that serve as metaphors for work situations. We put people in a situation where they have to team or communicate or organize or plan. After they experience these issues in real time, we try to relate it back to the job. We ask if there are situations back at NASA where the same sorts of scenarios occur. It's amazing how people will draw the connection.

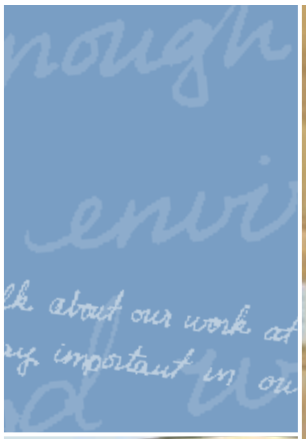
For example, let's say we wanted to work on communication. We would talk first about the subject. Then we might go outside and give a team some wood and tell them that they have ten minutes to build a house. Let's say that one of the team members runs off, without talking to anyone else, and starts building the house—when they come back here to work, they'll remember that. "Oh, yes, I remember when Todd ran off and started building that house without me. Now, here at work, I would really appreciate it, Todd, if you sat down and talked with me ahead of time." That's an example, I think, of combining approaches. We talk about the need for communication, but it's one thing to say the word; it's another to experience it.

I think if you're a smart enough manager and you get to know your team and read the environment right, you can play to people's strengths and weaknesses

Our office manages a lot of teams, and we've had a lot of teaming issues. We made some people uncomfortable, initially. How do you address interpersonal issues without your engineers thinking, "I can't believe you're wasting my time with this touchy-feely stuff"? But this year, when we discussed holding another experiential retreat, people were pounding on my door. This year they said, "When are we going? We can't wait to go!"

Have you seen results?

From last year to this year, I see a marked difference in our environment here at work. People are more collegial.



They will help one another out. There is more laughter in the meetings. I see more of a willingness to say, "Hey, I'll lend you money this month as long as you get me money next month." A year ago, that offering never would have come on the table.

On an individual level, we've seen changes, as well. At one of our retreats, one of the questions that we asked was, "If you were being used to the best of your capabilities, what would you be doing in this program?" We got different responses from people. In following up individually, we found that while somebody was perfectly willing to do a particular job, they might have more expertise or more of an interest somewhere else. We're very open to shifting people around.

Have you done that on a project—shifted someone's duties because of this sort of communication?

Yes, we have. For example, we brought in someone to do our project schedules. I found out at the retreat that she is certified in configuration management. We desperately needed that in one of our new start-up projects. So, we still need her help in schedules, but we have asked her to help set up the configuration management of this project.

Now she's a lot more gregarious in our meetings. Now she is jumping at the table, trying to give us new ideas. I think for her personally, it's making her feel more valued. And the project benefits at the same time.

I think if you're a smart enough manager and you get to know your team and read the environment right, you can play to people's strengths and weaknesses. You don't have to have lunch with them every day, but it's a mistake for any manager, whether you're heading up a project or a program, to neglect getting to know the people working for you.

If you had to sum up the most important thing you've learned during your tenure in program management, what would that be?

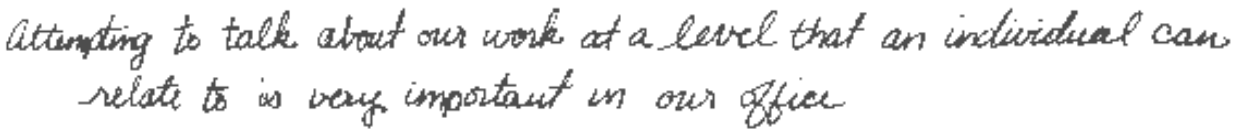
Work smarter, not harder. It sounds like a cliché, I know, but I've evolved from when I came into this job insisting that program management is no different from project management. I realized that I had to make a change in my work style. I don't believe I work as hard as I used to. I don't need to work harder—because I work better.

Too often our culture here is to fire and then aim. I used to jump into action. Now, I stop and think. I stop, take a breath and think. I still have the urge to leap into action, but I've learned that taking a moment to assess the situation helps me to reach a better resolution than if I just jumped right into action. That's the difference in my style.

I still work in an environment with deadlines and the need for action. Sometimes I make people angry when I say, "Excuse me. I'm sorry I'm slow, but can we think about this for a minute? Why are we doing this?" That really irritates some people around here, but I believe we need to slow down and talk before we act.

was right, that when our jobs make us feel as though we are going nowhere really, really fast, it means that we've let things go out of balance.

Now when I see people out of balance, I always try to remind them that unless they take care of themselves, they won't be of any value to us. If they hurt themselves, or have to miss work, or whatever because of health problems, not only will I feel bad as a human being, but as a program manager I realize that one of my resources won't be available for me. So, my advice to people always is to take care of themselves first. As soon as they can take care of themselves, then they'll be able to accomplish whatever it is that we've asked them to do.



So "faster" isn't always "better"?

Again, what I've found is that "harder" isn't always "smarter." Like many other people, my line of work means that I have to live the definition of multi-tasking. When we managed one program, I noticed that 10- to 12-hour days became the norm. Then as we moved to managing two programs, it became more like 12 to 14 hours a day, with weekends thrown in, and we started seeing a lot of burnout. We had to start dealing with some significant personnel issues—health problems, interpersonal conflicts, marital difficulties.

A friend of mine came up to me about that same time and told me how frustrated she was in her job as a project manager. She told me that she felt like she was on a treadmill going nowhere fast. And I realized that she

Do you see yourself as a person who has achieved balance herself?

I see myself as a person striving for balance. When I injured myself several years ago, one of my doctors said, "No medication for you. You've got to heal yourself." "What?" I asked him. I wanted him to give me that magic pill, but his prescription was to get balance in my life. Instead of medication, he suggested yoga, meditation and all of that.

At the time, I questioned his advice, but now I see that his "prescription" helped me heal more than just my injury. When I worked on weekends and worked all those long hours, I threw my life out of balance. Now, I'm finding you can still be successful without giving up everything else. •

JOHN BRUNSON is currently assigned to the Systems Management Office with the Marshall Space Flight Center. He is also a member of the Agency's Program Management Council Working Group. Previously, he was Project Manager for three separate microgravity payloads that flew on various Spacelab missions. His career in the space industry began in 1980 as a technician working on the first Space Shuttle.

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DR. MICHAEL HECHT is project manager and a co-investigator for the Mars Environmental Compatibility Assessment (MECA). He has been with NASA since 1982 at the Jet Propulsion Laboratory (JPL). In his previous assignment with NASA's New Millennium Program, he was instrumental in defining the "microlander" that was adopted as NASA's New Millennium Program Deep Space 2.

JODY ZALL KUSEK is a Senior Evaluation Officer at the World Bank. She is currently involved in supporting the efforts of seven governments to move to a focus of performance-based management. She has spent many years in the area of public sector reform, serving the Vice President of the United States, the U.S. Secretary of the Interior and the U.S. Secretary of Energy in the areas of Strategic Planning and Performance Management.

DONALD MARGOLIES was Project Manager for the Advanced Composition Explorer (ACE) mission, launched in 1997 and still operating successfully. He received the NASA Medal for Outstanding Leadership for his work on ACE and a NASA Exceptional Service Medal for the Active Magnetospheric Particle Tracer Explorers (AMPTE) mission.

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JOAN SALUTE is the Associate Director of Aerospace at Ames Research Center. She has managed many NASA projects including those involving flight testing of thermal protection materials, commercial technology, commercial applications of remote sensing and remote sensing science projects. She has been at Ames for 20 years, and was awarded the Sloan Fellowship to attend Stanford Graduate School of Business in the fall of 2002.

HARVEY SCHABES is currently assigned to the Systems Management Office at the Glenn Research Center. He started his career with NASA in icing research, and since then has served in numerous organizations in support of the Space Station Program.

CHARLIE STEGEMOELLER was selected in 1997 as Manager of the Johnson Space Center (JSC) Human Space Life Sciences Programs Office. He is responsible for the programmatic and tactical implementation of the lead center assignments for Space Medicine, Biomedical Research and Countermeasures and Advanced Human Support Technology. He began his career at NASA in 1985 with JSC Comptroller's Office as a technical program analyst.

HUGH WOODWARD served as the Chairman of the Project Management Institute (PMI) for consecutive terms in 2000 and 2001. He was elected to the Board of Directors in 1996, and before being elected as the Chair, served terms as vice chair and in several other key leadership roles. He is a program manager for Global Business Services with the Procter & Gamble Company.

The Dream and Its Demise

Chuck and Dave, two planning & scheduling engineers, meet at a project management conference and end up discussing the tricks of their trade

CHUCK: So, what have you been doing since you left the university?
DAVE: I finally landed a job at a big-name construction company. I'm Manager of Planning and Control—and I've gotten everything computerized to the max. We've got the latest programs galore for range estimating and whatnot, you name it.

CHUCK: We're doing something like that ourselves. I handle planning and scheduling for my company. The computers do everything for you: finance, payment, accounting with subcontractors, bid checking and comparison of subcontractors' bids. Hmmm, when you think about that, this conference is child's play.
DAVE: Yes, it really seems a waste of time.

Every detail is spelled out for them—what else do they need?

CHUCK: Hey, that reminds me...do you remember Hank, the guy in our class? He works as a project manager with us.
DAVE: You don't say...well, even at school he had managerial airs.

CHUCK: After six months of work he's already two months behind. I visited him yesterday with the latest plan updates, and what do I find? The original plan, already turned yellow. I told him there was a new one, he should take the old one off the wall. Tell me, why do we bother preparing updates?
DAVE: Listen to this one: We had a big project—four schedulers working on it. Full details. Due to time pressures, site representatives couldn't be involved in the planning. Close to execution we finally had a meeting with the project manager. At the end he got up and walked off. I stopped him on the way out and said, "Wait a minute. You forgot the plans." "Oh," he answered, "keep them in your office."

CHUCK: One of my project mangers went one better than that. He came running after me to the car carrying the plans I had brought him. "You forgot these," he said. Then they're all surprised when things don't run according to schedule. They simply ignore the updates.
DAVE: We peer as far as possible into the future, and work out the fine details, just the way the textbook said to. And what do they tell us? They don't understand it. Every detail is spelled out for them—what else do they need?

CHUCK: Know what this one project manager does to me? I work like crazy, my superiors are pleased as punch, but when I come to see the project manager all I get is a sour face. The plans are too late to do any good for the first week, not relevant; so the plans for the rest don't fit either, and he can't use them. Why was I late? Because I worked on his plans, that's why!
DAVE: They don't learn from experience. Everything is trial and error all over again. Well, looks like they're calling us back in. Another lecture.

CHUCK: What now?
DAVE: "Project Planning and Scheduling—The Dream and its Demise" by Alex Laufer.

CHUCK: I think I'll take the afternoon off. I've had enough experience with these clever Ivory Tower guys. Besides, I don't know what "demise" supposedly happened to the "dream" of scheduling. Scheduling's never been better.
DAVE: Yeah...when I think back on what the company looked like before I joined and how things are now, with all the computerized stuff; it's like night and day. If we could just find a program to replace those project managers... •

In Memoriam

STS-107

Michael Anderson

David Brown

Kalpana Chawla

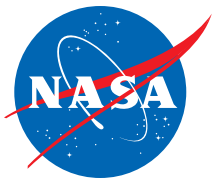
Laurel Clark

Rick Husband

William McCool

Ilan Ramon

ASK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