

Moving ahead

By Frank O'Donnell



Plans are underway to meet Lab's upcoming challenges

Despite the headwinds of a tight federal budget, thoughtfully executed initiatives to bolster innovation and continue diversifying JPL's portfolio of space projects can place the Lab in a position not only to weather the current environment but to emerge even stronger.

That is the message Director Charles Elachi and others in JPL's leadership have been taking to Lab managers and the workforce at large.

Plans call for efforts in four key areas: fostering innovation; creating an environment for effective execution of smaller missions, in addition to medium and large ones; making all missions cost-effective and successful; and investing in JPL's employees.

These were the main topics considered by the Executive Council at a retreat in May, shared by Elachi in an address to the Laboratory's managers just before the Memorial Day weekend.

"It's true that we have a lot of challenges now, but this is an environment where a creative institution like JPL can be successful," Elachi said in an interview. "There will be challenges and uncertainty, but I have no doubt that JPL will fare well, and the Lab 10 years from now will be even better than where we are today."

In February NASA released the Obama administration's funding request for fiscal year 2013. That plan made major cuts in the agency's planetary exploration budget and cancelled a major set of Mars missions in

2016 and 2018. Since then Congress has taken steps to restore planetary funding. At the same time the Lab has been developing new business with non-NASA sponsors that could possibly keep JPL's budget on an even keel in fiscal year 2013.

Elachi noted that JPL has benefited from diversifying its portfolio of programs and projects in recent years. "The JPL of the 1970s through 1990s was mostly a planetary exploration laboratory," he said. "Today, we are a space, planetary and Earth-exploration laboratory." Such diversification, Elachi suggested, "gives us broader intellectual reach," and allows the Lab to weather budgetary ups and downs in any given area.

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Survey shows strong pride in workplace

Employees also seek better understanding of Lab's future direction

By Mark Whalen

More than 90 percent of JPLers take pride in their work and maintain positive interactions with their supervisors, reflecting much higher views about their jobs than is typical in industry, a recent survey of Lab employees revealed.

Some 93 percent of JPLers surveyed agreed or strongly agreed with survey statements on workplace pride and satisfaction, noted Jaime Gonzales, manager of the Professional Development Section. That figure is

15 percent above comparable industry figures, according to the results of the survey that concluded in April. Consultant Kenexa Corp. implemented the survey for JPL.

"People take significant pride in working here," Gonzales said. "That may not be a surprise in general, but the overall strength of that number, from our vendor's perspective, is off the charts."

Counterbalancing the positive feelings, many respon-

dents expressed uncertainty about the Laboratory's future and said they would like to have a better understanding of their individual roles. Lab managers noted, however, that the survey was conducted shortly after NASA announced a budget request with significant cuts in the planetary program, which may have heightened concerns about the Lab's outlook.

About 68 percent of JPLers responded to the survey. Analysis includes data for each directorate as well

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Over the last decade, he said, the Lab has been very successful in broadening its footprint in space exploration by working with all of the divisions in NASA's Science Mission Directorate, as well as other NASA offices, the Department of Defense and commercial customers.

Foremost among the Lab's strategic thrusts is a focus on cultivating and sustaining innovation. "If you don't have innovation, nothing else matters," said Elachi. "If you do have innovation, nothing else matters. So being very successful in that is essential."

"At JPL, we never had a shortage of good ideas," said Jakob van Zyl, the Lab's associate director for project formulation and strategy. "What we need to be looking at is the infrastructure and the funding to turn those ideas into reality. We need to find ways for people who have good ideas to be able to try them in a reasonable amount of time, so we don't spend years and years working on an idea only to find it isn't going to work out."

Another priority for the Lab's leadership is improving how JPL carries out smaller missions, known as Class C and Class D projects. Many of the Lab's processes and tools were designed for major flagship missions—"Class A" projects—where mission success outweighs all other priorities. Simplifying them will help smaller efforts such as technology projects and missions under NASA's Discovery, Explorer and Earth Venture competitive programs.

On a related note, Lab executives are looking as well at how to make all of JPL's flight projects as cost-effective as possible without sacrificing mission success. "At the end of the day, we need to be successful," said Elachi. "So the question here is, what can we take away from our lessons learned on what we can do to reduce costs?"

The final major element of the strategic focus is JPL's investment in its workforce—or creating "the employee

of the future." Here Lab executives are looking at results from the recent employee survey to understand better what members of the staff are looking for in developing their careers.

"Are we giving our people the right opportunities to build their skills in an effective way once they join JPL?" van Zyl asked. "Do we have the right mix of diversity so that we can benefit from how people from different backgrounds think in different ways? Do we have the right size of groups so that supervisors can spend enough time with their people? These are all questions that we are exploring."

Among the program directorates, a priority in solar system exploration will be to continue working on different options for a mission to Jupiter's moon Europa. The strategy is to continuously advocate and be ready to go when funding becomes available. JPL will also redouble its efforts on winning new missions under NASA's competitive programs such as Discovery and New Frontiers.

Much of the direction for future Mars missions will depend on an agencywide planning group headed by former NASA executive Orlando Figueroa in which JPL leaders are participating. Future missions will almost certainly involve a combination of goals to support science objectives and pave the way for human exploration, Elachi said.

Earth science is probably JPL's healthiest programmatic area at present, given the Administration's support for this area. A primary challenge for the Lab in this area is to maintain continuity across sets of data returned by various missions so that scientists are able to use them productively with as few gaps as possible.

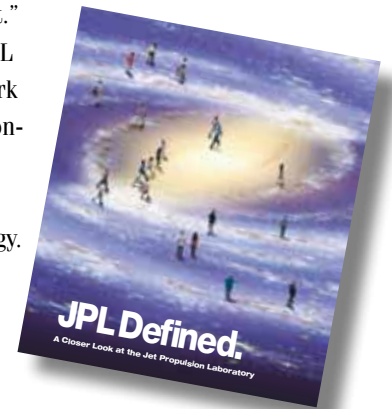
In astronomy and physics, JPL will work on reshaping its exoplanet program to make missions more affordable. "Clearly, in the current fiscal environment, building very,

very large telescopes is not in the cards," said van Zyl. "So this is where innovative thinking is required. People need to sit down and create an affordable program that can do exciting things."

In the Interplanetary Network Directorate, engineers are working on ways to make sure JPL has enough communication capability to support all of the missions of the next decade, with an eventual transition to optical communication. "They are also doing some interesting initiatives in moving large data sets around," said van Zyl. "Projects of the future will involve larger and larger data sets. We are just beginning an initiative that we call Big Data to address that."

In non-NASA work, JPL plans to pursue new work for defense and civil sponsors, including energy technology research for the Department of Energy.

As a new resource to help JPLers understand the Lab and the spectrum of its work, Elachi announced that a book titled "JPL Defined" will be released this summer. According to Firouz Naderi, JPL's director for planetary exploration, the document was created in response to employees' desires to have better insight into the scope of JPL's work beyond their immediate organizations. "JPL Defined" was conceived by Naderi, who co-edited the book with Brent Sherwood, manager of the JPL Innovation Foundry, with input from members of the Executive Council. The document was produced by Audrey Steffan, Marilyn Morgan and David Hinkle of the Design Services Team. ■



SURVEY *Continued from page 1*

as for the Lab as a whole. "We were extremely pleased with the participation rate, given this is the first time in seven-plus years that we've surveyed the population, and it was done in an accelerated time," Gonzales said. "We got a lot of data from a representative sample of the Lab, and now the challenge is to do something productive with it."

The survey specifically sought to measure the concept of employee engagement, which is viewed by Kenexa, a leader in employee engagement research for more than 20 years, as a significant contributor to employee performance and productivity, the "psychological investment" employees have in their work and workplace, Gonzales noted.

Data from four of the survey areas—overall satisfaction, pride in the workplace, advocacy (willingness to recommend working at JPL to family/friends) and commitment (what motivates them to stay at JPL)—were averaged to form an "engagement index." For JPLers, this index had a 75% favorable response rate, which is high compared to industry norms (68%).

A similar index also measured management effectiveness. The responses showed employees typically have positive feelings about their relationships with their immediate supervisors just slightly higher than industry norms. When asked whether their supervisor is an outstanding leader, is trustworthy, treats them with respect

and cares about their well-being, JPLers responded with 75 percent agreeing or strongly agreeing. The industry average is 74 percent. In addition, Gonzales added, employees expressed a high degree of trust in their immediate supervisor (78 percent favorable) as well as confidence in JPL's commitment to ethical business decisions and conduct (81 percent favorable).

But the survey also indicated that many employees aren't sure of the future direction of the Lab.

"Employees look to that leadership for communication, confidence and clarity about our future direction," Gonzales said. "These results suggest that in order to maintain overall engagement, we can do a better job of ensuring this kind of communication flows to all levels of the organization. We need to make sure that managers have the information they need in order to communicate credibly about the future with their staff. Employees are looking for a realistic view of the Lab's future direction, the pathway to getting there, and the role they can play."

"The good news is that vast majority of employees have a strong bond with their supervisor," Gonzales added. "And, in spite of the uncertainty about the future, JPLers remain engaged as a workforce. That's a great foundation to build on."

A key to the impact of the survey is in the follow-up action that comes out of it. A significant number of respondents—about 45 percent—were neutral on whether they believed positive change would happen as a result of the survey. "That tells me employees, for the most part,

are expressing a 'wait and see' viewpoint on the survey," Gonzales said. "So we have a great opportunity to influence a large number of employees in a positive direction by taking action. That doesn't mean a laundry list of actions will be created. If there are one or two significant things we can improve on, let's focus our time, energy and resources there. Communication is certainly one of them—ensuring that there is clarity, understanding and reinforcement of those messages about the future, so employees can continue to sustain a sense of engagement, pride and satisfaction."

Gonzales added that there is good reason to believe the survey can lead to workplace improvements. The 2005 survey, for example, led to the creation of the 9/80 alternate workweek, which has been hugely popular with employees.

Survey respondents were anonymous. Data from the survey can only be aggregated in groups of five or more for reporting and analysis purposes. No individual survey responses may be obtained.

The next follow-up action is to communicate survey results within the directorates, where specific actions in response to survey findings could be considered. Lab-wide, follow-up activities could include focus groups to get additional employee input and involvement as well as additional mini-surveys to measure progress on any actions taken. Gonzales recommends a new survey every 18 to 24 months. ■



INNOVATION, DEDICATION WILL LEAD THE WAY

**ELACHI EXPRESSES
CONFIDENCE IN LAB'S
OUTLOOK**

By Frank O'Donnell

JPL faces a challenging budgetary year, but Director Charles Elachi believes the Lab can not only endure but come out more robust. Here he shares his thoughts on strategies the Lab is pursuing to adapt to the current environment.

YOU'VE BEEN SAYING THAT INNOVATION IS CRITICAL TO THE LAB'S FUTURE. ISN'T JPL NATURALLY AN INNOVATIVE PLACE?

We believe that we have some of the most innovative employees anywhere. For example, when we recently asked for ideas for future Mars missions, we ended up with 100 ideas. About two years ago, we asked about ideas for technology, which resulted in 150 ideas. So, no question we have employees who are very innovative.

But just having innovative ideas isn't enough—you need the tools and funding mechanisms to develop them. In recent years we have worked with NASA to set aside resources in our Research, Technology and Development fund. This represents about 3 percent of our budget.

IS THERE ANYTHING ELSE JPL NEEDS TO STIMULATE INNOVATION?

We need to have an infrastructure that allows us to "fail quickly." This is an idea that Jonas Zmuidzinas, our chief technologist, brought up. What he means is that if you come with a new idea, you don't want to drag it along for two years only to find that it doesn't work. You want to be able to move forward quickly, in a month or two, and try it and see if it works or it doesn't work. This is an area that deserves more attention. We have a team that is going to be looking at providing tools such as a small machine shop and fast procurement paths in order to help test ideas quickly.

ARE THERE OTHER CHANGES TO JPL'S INFRASTRUCTURE THAT YOU FEEL ARE NECESSARY TO KEEP THE LAB COMPETITIVE?

We've also been looking at how we do smaller projects. We have a team that will look at whether we need an organizational construct of some kind to support doing these smaller missions.

We have also been looking at the question, how can we be more cost-effective but successful? At the end we have to be successful.

THERE HAS BEEN TALK RECENTLY OF INVESTING IN EMPLOYEES. WHAT DOES THAT MEAN TO YOU?

In the recent employee survey, there was a high percentage of people who said they'd like opportunities for new assignments on the job. We need to understand exactly what they mean by that. Do they want to spend some time in research, some time on flight projects and some time in a program office? Or do they want to broaden their technical background by doing different functions within a project? We need to work with line management and project management to understand that better.

DID ANYTHING ELSE STRIKE YOU IN THE RESULTS FROM THE EMPLOYEE SURVEY?

There were some very positive things that I was delighted to see, and also some challenges that we have to really work on. On the positive side, people are very proud of JPL—well above the average in industry. Employees also had a favorable view of management effectiveness.

There was also a lot of concern expressed about the Lab's future. That probably reflected concerns on everyone's mind around the time the survey was conducted, just after NASA's FY 13 budget request came out. But I think there is still a lot of room for improvement, how we communicate at all levels and across the Lab about our strategy and where we're heading.

Another point the survey brought out was that many people responding were skeptical anything will come out of the survey. My job is to prove them wrong. We take these surveys very seriously, and we are going to take action related to it. You need only look at our last employee survey, conducted a few years ago, which resulted in the creation of the extremely popular 9/80 alternate work week. Hopefully everyone will see that we look at the survey very carefully and act on it.

SINCE YOU BECAME JPL DIRECTOR, YOU'VE SPENT A LOT OF TIME MEETING WITH EMPLOYEES AT ALL LEVELS. HAS THERE BEEN TOO MUCH EMPHASIS ON THIS RESPONSIBILITY FOR COMMUNICATION BEING ON YOUR SHOULDERS?

No question that communication is important at every level. One thing we saw from the survey is that employees trust their immediate managers and they have high confidence in their immediate managers. But we need to focus more on engaging all layers of management in communicating our strategy and outlook.

On May 25 I spent an hour and a half with all the line managers, describing to them our strategy and the rationale behind it. So my expectation is that the divisions will meet with their sections on a regular basis and explain to them what's happening, and then the sections will communicate with the groups and on to individual employees. I think this will create broader confidence that the leadership at JPL and the management at JPL have a well-thought plan of how to address the challenges that we are facing.

IF YOU WERE ON AN ELEVATOR WITH A JPL EMPLOYEE AND HAD JUST A FEW MOMENTS TO SHARE WHAT'S ON YOUR MIND, WHAT IS THE MOST IMPORTANT THING YOU WOULD WANT THEM TO TAKE AWAY?

I think the key message I'd want to express is that JPL of today is very different from the JPL of 20 years ago. We have diversified far beyond the planetary missions that JPL was famous for in its early years, and we have become a really well-rounded space and Earth-exploration lab. This has broadened our intellectual reach and has helped us in very tough budgetary times, so we are not fatally dependent on a single area such as planetary or Earth science or astrophysics.

Yes, we are in a very tough budget environment, but I'm confident that JPL will fare well. It will be painful and there will be nervousness and uncertainty, but I have no doubt that JPL will thrive. The strongest organizations do well in challenging times because they have the best people and the best thinkers.

I think it's also worth reminding everyone what the chief scientist of NASA said when he came to JPL earlier this year. He said, "When I was at Goddard, I was awed by JPL. When I went to university, I was awed by JPL. And I'm coming back and I'm the chief scientist, and I'm still awed by JPL." When you go around the world and hear people say they are "awed by JPL," it's not about the buildings and the infrastructure. It's really all about our talent, our people. ■

News Briefs

Benefit event June 16 at Caltech

The Child Educational Center will hold its annual fundraiser Saturday, June 16 from 6 to 10 p.m. at Caltech's Avery House. Tickets for the event, themed "¡Qué Viva!," are \$75 before June 8 (\$85 after that, \$100 at the door).

The evening features wine and beer tasting along with a variety of tapas from a local restaurant. Entertainment will include a live flamenco performance and jazz by the Chad Edwards Quartet.

Items up for bid in live and silent auctions include gourmet dinners, fine wines, tickets for sports and other events, children's activities, a variety of personal services from landscaping consultation to spa treatments, and trips to Mammoth and Aspen, Colorado. Also, an opportunity drawing (\$5 per ticket) for a Macbook Pro, an iPad 3rd generation and an iPod Touch.

Tickets for the drawing and the event are available at the JPL Store, the CEC main office at 140 Foothill Blvd., adjacent to La Canada High School, or online at <http://cecbenefit.org>. For more information, contact Julie Halverson-Godson at ext. 4-3418 or julieh@caltech.edu.

Childcare offered for summer, fall

The Child Educational Center currently has part-time and full-time openings in its 2-year-old and preschool groups. The school is also enrolling students for its upcoming school-age summer camp.

The center's summer offerings will include swimming and other outdoor activities as well as creative indoor projects. Unique experiences are the Altadena Stables' Horse Camp and a full day at Descanso Gardens in La Cañada. CEC provides transportation to and from both venues, with extended care available.

For children entering grades 4 through 7, Adventure Zone Camp will include a trip to an amusement park, bike riding on the beach, and much more.

The CEC will also offer after-school programming for the summer sessions of the La Cañada-Flintridge Assistance League and Pasadena Educational Foundation.

For more information on summer activities, visit <http://www.ceconline.org/programs/summercamp.aspx>.

For the 2012-13 term, the school is enrolling students in the infant/toddler and preschool programs. Also offered for children between 2 years, 6 months and 5 years, 11 months is the Cooperative Preschool at Caltech, which provides the same research-based, developmentally appropriate care and education as the infant/toddler and preschool programs.

For more information, contact Helen at hrupeel@caltech.edu or ext. 4-3418 or visit www.ceconline.org.

Burt is journal guest editor

Eric Burt of the Frequency and Timing Advanced Instrument Development Group over the last year served as co-technical program chair for an



Best conference paper earns kudos

JPL authors of "The Geostationary Fourier Transform Spectrometer (GeoFTS)" won a "best paper" award out of more than 500 papers presented at the Institute of Electrical and Electronics Engineers Aerospace Conference held in March.

The best paper is selected on the basis of technical innovation and quality of presentation. GeoFTS is a revolu-

tionary new imaging spectrometer for Earth science measurements of key atmospheric trace gases and process tracers related to climate change and human activity.

Above, from left are co-authors Richard Key, Stanley Sander, Annmarie Eldering, David Rider, James Wu, Dmitriy Bekker, and Ken Manatt (not pictured is co-author Jean-Francois Blavier).

international conference and as guest editor for a special issue of an associated journal, which was published in March.

Burt was guest editor of "IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control" (<http://www.ieee-uffc.org/main/publications/tr/toc.asp?vol=59&iss=03>), a journal devoted to the joint IEEE International Frequency Control Symposium and European Frequency and Time Forum held in San Francisco in May 2011. Each conference is held annually, with the joint conference scheduled every other year.

Student brochure honored

"Discover JPL," a brochure highlighting Laboratory student research projects for academic collaborations and recruiting, has won several awards in an international design competition.

Publication designer CMg Design Inc. of Pasadena won four 2012 Communicator Awards, an annual competition honoring the best in advertising, corporate communications, public relations and identity work for print, video, interactive and audio. The awards are judged and overseen by the International Academy of the Visual Arts.

The brochure is available at <http://scienceandtechnology/newsandevents/newsdetails?NewsID=1453>.

Passings



Walter Michalsky

Walter Michalsky, 94, a retired artist, died March 1.

Working in the art section of the Publications Department and wind tunnel, Michalsky built interactive, educational kiosks depicting space milestones. He is also credited with designing a JPL logo in 1953 that has been widely used.

Michalsky is survived by children Gary and Gayle; grandchildren Laurie, April, Christina, Garret, Fiona and RJ; and 11 great-grandchildren.

Services were held March 24 at Peris Valley Cemetery.

Jack Wells, 82, retired supervisor of the Facilities Maintenance and Operations Section, died March 10.

Wells worked at the Lab from 1959 to 1994, the year he was awarded NASA's Exceptional Service Medal. He is survived by sons Richard and Jeffrey, and sister Charmaine.

Services were held March 17 at Rose Hills in Whittier.

Frank English, 94, a retired technical writer, died April 12.

English joined JPL in 1967 and retired

in 1982. He worked in the Publications and Technical Documentation sections.

He was preceded in death by his wife, Reita, and is survived by his son, Brian. Services were held April 18 at Rose Hills in Whittier. The English family requests consideration of donations to the Reita English Memorial Cancer Fund, care of Presbyterian Hospital, 12401 Washington Blvd., Whittier, CA 90602.

Paul A. Willis, 84, retired supervisor of the Firmware and Monitor & Control Group, Radio Frequency and Microwave Section, died April 22.

Willis worked at JPL from 1988 to 1999. He is survived by his wife, Patricia; children Peter, Pamela, Philip, Patrice and Patrick; eight grandchildren and two great-grandchildren.

Services were held at Riverside National Cemetery.



Kane Casani

Retired engineer and manager **E. Kane Casani**, 76, died May 11.

Casani joined the Lab in 1958. Early in his career he contributed to the Mariner C and Surveyor II missions and was named manager of system design and integration in 1974. Two years later he became manager of the Infrared Astronomy Satellite

Project. Casani also managed the New Millennium Program, the Observational Systems Division, the Miniature Seeker Technology Integration Project, the Infrared Astronomy Satellite Project, the Flight Projects Implementation Development Program Office, Project Design and Strategic Planning Office, and the Project Design Center.

In 1996, a year before his retirement, Casani was awarded NASA's Outstanding Leadership Medal.

A memorial celebration will be held Saturday, June 23. Those wishing to attend should RVSP to John Casani at jrcasani@gmail.com.

Nyle Milam, 81, a retired administrator, died May 11.

Milam joined JPL in 1959 and retired in 1995. He served in financial/personnel/administrative roles for the Propulsion Division, the Information Systems



Nyle Milam

Development and Operations Division and the Office of Space Science and Instruments.

Milam is survived by his wife, Hanh (Section 3212); sons Aaron, Blake and Drew; daughter Melinda Piette, her husband Vernon Piette (Section 172K) and their daughter and Nyle's granddaughter, Marie; and brother and former JPL employee Gary Milam.

Services were held May 24 at the Church of Jesus Christ of the Latter Day Saints in Pasadena.

Letters

Thank you to my JPL co-workers for their kind thoughts, condolences and the gifts of plants during the recent passing of my mother. Their support has been deeply appreciated.

Mimi Paller

My family and I would like to thank JPL and all of my co-workers for the beautiful plant and flowers that were sent in honor of my mother, who recently passed away. Your thoughts, prayers and condolences are greatly appreci-

ated. The plant was one of mom's favorites so I have placed it in a special spot. Thank you all very much.

Martha Criss

Retirees

The following employees retired in May: **Kathleen Myers**, 51 years, Section 2726; **James Rose**, 43 years, Section 510; **Nancy van Wickle**, 32 years, Section 1000; **I-Lin Tang**, 28 years, Section 3248; **Solomon De Picciotto**, 21 years, Section 318F; **Sharon Allen**, 15 years, Section 311.



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AT JPL'S ONLINE NEWS SOURCE
<http://jplspace>

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