

# The go-to gang

## The Technical Fellowship gives Boeing a marketplace advantage.

Here's how some of its many members have created value by tackling vexing challenges. All stories by Cindy Naucler Glickert

**B**oeing engineers have been pushing the boundaries of flight and defining the future of aerospace for almost a century. These engineers have overcome seemingly insurmountable technology challenges by teaming up and applying their combined knowledge, skills, experience and imagination to solve the problems at hand. Their achievements have given Boeing an unmatched technological legacy.

Boeing maintains this tremendous engineering capability by cultivating and recognizing top engineering talent in a number of ways—challenging assignments, high-potential programs, mentoring, special invention awards and more. One of its keystone programs is the Boeing Technical Fellowship.

The roughly 2,300 members of the Technical Fellowship represent some of the best engineering and scientific minds at Boeing and in the industry, and give the company a strategic advantage in today's fiercely competitive marketplace. By developing and supporting the technologies that make it possible for Boeing to offer its customers high-performance products and services at affordable costs, the Technical Fellows are ensuring the company remains competitive today and in the future.

"Members of the Technical Fellowship are the people we turn to when there's a particularly vexing problem to be solved," said Amy Buhrig, corporate sponsor of the Fellowship Program and Enterprise Technology Strategy director. "We count on the depth and breadth of their knowledge for everything from solving hard problems on existing programs to coming up with creative solutions for new business opportunities and helping develop our long-term technology strategy."

Established in 1989, the Technical Fellowship Program offers a technical career path for the company's engineering and scientific community. Recently, the Fellowship was revised to ensure that it is better aligned with Boeing's evolving business needs.

The Fellowship Program office and Senior Technical Fellowship Leadership Team have now tied members' work more closely to product requirements and streamlined the Fellowship selection process. These changes reflect guidance from Boeing Chief Technology Officer John Tracy, who solicited advice from senior management, Senior Technology Fellows and engineers across the company on how the Fellowship can operate more efficiently and effectively in meeting Boeing's needs.

"We moved to a management nomination process to reinforce discussions between a manager and employee, and to help assess when is the right time for a candidate to enter into the selection process," said Sue-Lynn Yim, Fellowship program

manager. "We also updated the qualification criteria to better focus on technical excellence, innovation and sustaining our technical knowledge across generations."

The selection criteria were distilled from nine items down to five. The simplification didn't change what the program is looking for in candidates, but rather clarified expectations. The criteria are:

- **Technical knowledge and judgment** – "It means having a company or industry level of influence over the direction of where a technology is headed," said Ken Hays, Fellowship chair and Senior Technical Fellow. "It's where the rubber meets the road for Boeing and really enables results."
- **Boeing impact through creative problem solving and innovation** – "This is about originality," said James Farricker, Fellowship deputy for Engineering, Operations & Technology and a Senior Technical Fellow. "In terms of inventions and patents, it addresses what scientific tools people have developed to increase productivity and our ability to service our products."
- **Technical leadership, advisory and consulting** – "This is where candidates get to show that they're an authority within their discipline," said Bill Seidler II, Fellowship deputy for Integrated Defense Systems and a Senior Technical Fellow.
- **Capability as a teacher and mentor** – This criterion ensures Boeing has the necessary technical skills for the future, said Dave Nakamura, Fellowship deputy for Commercial Airplanes and a Senior Technical Fellow. "A candidate should transfer knowledge to other employees through activities such as communities of practice, lectures, and seminars and classes, as well as providing career guidance."
- **Having technical vision** – This refers to how a candidate has helped steer the direction of a development effort and worked to get that vision infused into Boeing's planning processes.

New this fall is a pilot program called EDGE (Explore-Dream-Grow-Energize) that is intended to provide resources for Fellowship members to develop ideas outside their regular jobs. This pilot program, which began in September and will run through Dec. 15, will fund Fellowship members for up to a week to identify novel and innovative solutions providing value to Boeing and its customers.

"It's an opportunity for Tech Fellows to spend time brainstorming about challenges and opportunities that will keep Boeing innovation at the cutting edge of technology," Buhrig said.

In the next pages, meet some of the Technical Fellowship members who are demonstrating the technical knowledge, leadership and vision that make the Fellowship critical to Boeing's future. ■

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# Mitigating threats

“We’re developing the tools that can sift through the data and find the key parts. And that saves lives by providing better information to warfighters.”

David Miazza is uniquely qualified to support Boeing military customers in the fight against terrorism.

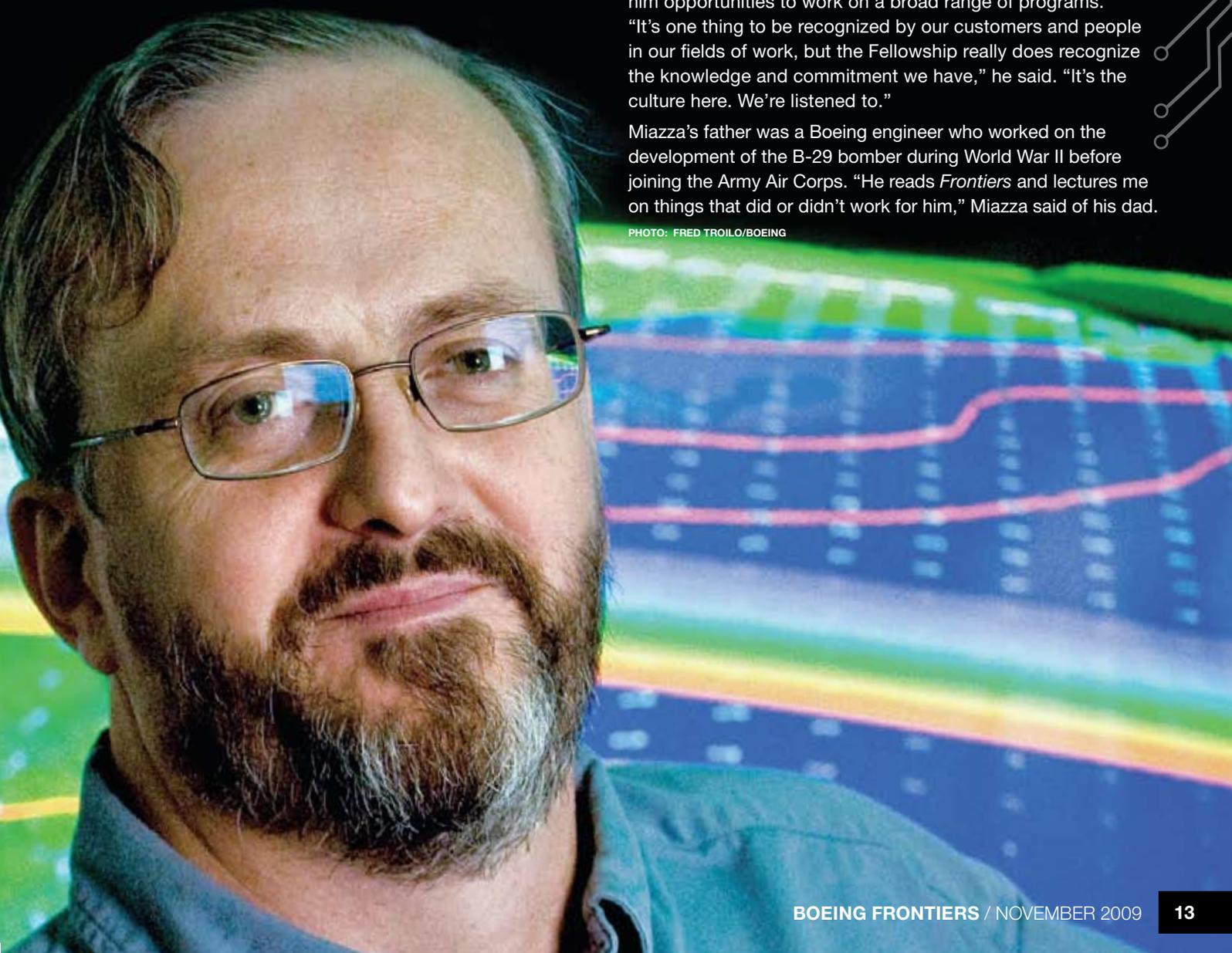
A Technical Fellow in Integrated Defense Systems’ Mission Systems unit in Springfield, Va., Miazza started as an electrical and an electro-optics engineer. Now he works more broadly in systems engineering, remote sensing and intelligence systems. The background of Miazza, who is sometimes labeled a “hybrid” engineer because of his knowledge in electronics, physics and optics, is a big plus for Mission Systems, which supports the U.S. Defense Department and the Intelligence Community.

“Terrorism happening on the other side of the world can impact us very quickly,” Miazza said. “There are more and more [data] sensors and faster processing, but you can be buried by the data they produce. We’re developing the tools that can sift through the data and find the key parts. And that saves lives by providing better information to warfighters.”

Miazza credits the Technical Fellowship Program for giving him opportunities to work on a broad range of programs. “It’s one thing to be recognized by our customers and people in our fields of work, but the Fellowship really does recognize the knowledge and commitment we have,” he said. “It’s the culture here. We’re listened to.”

Miazza’s father was a Boeing engineer who worked on the development of the B-29 bomber during World War II before joining the Army Air Corps. “He reads *Frontiers* and lectures me on things that did or didn’t work for him,” Miazza said of his dad.

PHOTO: FRED TROILO/BOEING



# A mind field of information

Emily Howard is one of Boeing's leading experts in analyzing how people process information—critical in the design and development of software applications that support network-centric systems.

“Through a series of engineering-prototype experiments, we can objectively evaluate how well our products would enable military decision-makers to gather and disseminate information—and adjust our development efforts as a result,” said Howard, a Huntington Beach, Calif.-based Senior Technical Fellow with a doctorate in psychology. “The ability to process volumes of information quickly can mean life or death on a battlefield.”

Some colleagues haven't always understood the benefit of using psychology to study how people learn and make decisions and then applying that knowledge to engineer better products.

“That's where the Fellowship has really helped me,” said Howard, who's with the Advanced Command, Control and Communications (or C3) Networks team of Phantom Works, the Integrated Defense Systems organization that works on advanced concepts and technologies. “It's given me the opportunities to illustrate the business value, in both growth and productivity, for understanding human information processing and its effect on our products.”

One of her recent achievements was adapting the Future Combat Systems program's user interface to create a Joint Warfighter-Machine Interface framework supporting numerous applications. Her next challenge? “I'd like to apply my skills internationally, to address how information technology can be applied to support cultural differences in decision-making, and open new markets for Boeing.”

PHOTO: MICHAEL GAIL/BOEING

“The ability to process volumes of information quickly can mean life or death on a battlefield.”



# Electric moves

“Being part of the Technical Fellowship Program has enabled me to conduct advanced research with universities across the globe.”

David Blanding keeps motoring on, helping push the technology on Boeing aircraft to new frontiers. A Boeing Research & Technology Technical Fellow in Huntington Beach, Calif., Blanding has been instrumental in developing sophisticated electric actuators for military, space and commercial aircraft.

“The electric actuator is not only improving aircraft performance and reducing weight—it’s cutting maintenance costs,” Blanding said. “Now we’re moving toward putting this technology on critical primary flight control surfaces.”

Blanding is one of Boeing’s resident experts on replacing hydraulic actuators with more efficient electric versions. “Electric actuators have been used for years on secondary flight control and utility systems for military aircraft, spacecraft and commercial airplanes,” he said. “What’s new is, we’re evaluating the technology for use in controlling an aircraft’s primary flight control surfaces, which include the aileron, the spoilers, the elevators and the rudder.”

Blanding, who holds a master’s degree in technology management, said he has a strong working relationship with teams from Integrated Defense Systems. But he credited the Technical Fellowship Program for helping him share—and add to—his knowledge of electric actuators by working with people beyond IDS.

“Being a Tech Fellow has enabled me to build a really rewarding partnership with engineers in Commercial Airplanes,” he said. “The program enables you to meet the right people who need your technical expertise. And being part of the Technical Fellowship Program has enabled me to conduct advanced research with universities across the globe.”

Blanding’s engineering activities extend beyond Boeing and into the Huntington Beach community. “I’m especially focused on helping young African Americans go to college and major in the sciences,” he said. “Helping young people to go beyond where I am is more important than helping them get to where I am.”

PHOTO: MICHAEL GAIL/BOEING

# Fueling a need

As a young man, Mark Kay paid for his degree in mechanical engineering by working evenings at a gas station. Today, he's still working with fuel—only now it's at the cutting edge of biofuel technology.

“Boeing isn't in the business of making fuel, but our products use it,” said Kay, a St. Louis-based Associate Technical Fellow with the Platform Systems Technology team of Boeing Research & Technology. “That's why it's our job to work with oil companies and small biotech companies to help steer the development of biofuels. That and the fact that it's the environmentally responsible thing to do.”

Platform Systems Technology collaborates with suppliers and technology providers to produce leading-edge solutions for military and commercial programs. One of its biggest areas of interest is biofuels.

“We work with commercial industry organizations, as well as organizations within the U.S. Air Force and Navy, that control fuel specifications,” Kay explained. “We help develop the specifications that will enable planes to handle new alternative fuels. They need to be a ‘drop-in replacement,’ which means they need to perform as well as the petroleum fuels.”

Kay's connection with fuel started early, at that gas station. He also had an early appreciation for protecting the environment.

“As a kid growing up in St. Louis, I remember winters when the snow would start to turn black from the coal-fired plants after a couple days,” he said, adding: “Now when snow stays for a week it remains white. That's important to me as a father of four—and a guy with a bass boat.”

PHOTO: RON BOOKOUT/BOEING

“It's our job to work with oil companies and small biotech companies to help steer the development of biofuels.”



# Engineering at the speed of light

“I’m able to get involved with not only building prototypes but also seeing them through to the design and test stages.”

This summer, when the Advanced Tactical Laser, or ATL, aircraft first hit a ground-based target while in flight, Steven Griffin, an Integrated Defense Systems Technical Fellow in Albuquerque, N.M., had reason to be proud.

Griffin works vibration control issues for the modified C-130H aircraft, which carries a high-energy chemical laser and beam control system designed to destroy, damage or disable targets with little or no collateral damage. He remembers being called in about three years ago when there was a critical vibration problem with the laser’s primary mirror.

“We had 10 days to test the hardware, analyze it, design a vibration device to resolve the problem and then integrate it,” he said. “It was one of the highlights of my career.”

Griffin, who has a doctorate in aerospace engineering, is one of the company’s experts in structural dynamics, acoustics and vibration control for Directed Energy Systems. “My work can change from tackling a vibration problem in Albuquerque one week to working an acoustics problem in Seattle the next,” he said. “It’s a good fit because I’m able to get involved with not only building prototypes but also seeing them through to the design and test stages.”

Before coming to Boeing, Griffin worked as a military officer and then a civil servant. “The fact that Boeing maintains a technical career path through the Technical Fellowship Program is a real attraction to me,” he said. “Lots of aerospace companies advertise dual career paths, but at Boeing I’ve seen it in action and it’s a true path I can take to continue to advance.”

PHOTO: BOB FERGUSON/BOEING

# One up

On the 787's final assembly line you'll hear about the One Up Assembly process, developed by a team under the leadership of Associate Technical Fellow Tanni Sisco. This process enables the drilling and fastening of 787 hybrid joints without having to disassemble parts for cleaning or deburring.

"The technology was imperative for the 787's breakthrough design, manufacturing and cycle-time goals," explained Sisco, of Commercial Airplanes in Everett, Wash.

The assembly process was developed by working with the Intellectual Property Management team and engineering communities across the enterprise. The payoff: It helps reduce airplane assembly time while increasing Boeing's competitive edge in manufacturing assembly processes.

Finding out-of-the-box solutions for problems is nothing new to Sisco. As a teenager, she and her sisters had to leave their homeland of Iran following that nation's revolution in the late 1970s. Her father, a military officer, was imprisoned for political reasons. When she arrived in the United States at age 19, Sisco worked full time while attending the University of Idaho, where she earned her bachelor's degree in mechanical engineering.

"I really think my best asset is my tenacity," she said. "I don't give up and I work hard."

Before supporting the 787 program, Sisco worked as a 777 shop manager where she experienced the challenge of building airplanes and "making the [production] rate." She enjoyed the opportunities that a managerial job brings, but credits the Technical Fellowship Program for helping her move to her current technical role.

"The Technical Fellowship Program has provided me with more opportunities to learn about the technical and business side of airplane manufacturing," Sisco said.

PHOTO: GAIL HANUSA/BOEING

"The technology was imperative for the 787's breakthrough design, manufacturing and cycle-time goals."



# Connecting worlds

“It has really enabled me to share a lot of my network and wireless activities across the enterprise to make sure we’re all focused on the right priorities.”

What keeps Sudhakar Shetty busy? Exactly the kind of thing you’d expect from a Senior Technical Fellow. “I am working on technologies to ensure that our airline customers, suppliers and Boeing can connect to our airplanes at any time, from anywhere around the globe—to build, operate and maintain them safely and efficiently,” said Shetty, a Senior Technical Fellow with Commercial Airplanes’ Airplane Systems team in Everett, Wash., who holds a doctorate in electrical engineering.

Shetty has worked with airlines and suppliers worldwide to develop industry standards for onboard network and wireless systems. He leads Commercial Airplanes’ work in network and wireless systems research strategies and technologies. And he supports the Networked Systems Technology Domain, one of eight companywide technology groupings in Boeing’s Enterprise Technology Strategy that is designed to better integrate and focus Boeing’s technology investments. In this group, he is aligning Commercial Airplanes’ strategies with those of Boeing Research & Technology and Integrated Defense Systems.

Shetty credits the Technical Fellowship Program for helping him gain additional career experiences and opportunities. “It has really enabled me to share a lot of my network and wireless activities across the enterprise to make sure we’re all focused on the right priorities,” he said.

A native of India, Shetty serves on the board of directors of the Indo-American Friendship Forum, a nonprofit group that focuses on educational and trade activities between the United States and India and within the Indo-American Community. In 2008, he helped establish an aerospace network research consortium in India.

PHOTO: GAIL HANUSA/BOEING

