National Aeronautics and Space Administration

AEROSPACE Frontiers

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Glenn Expertise Earns Software of the Year Honor

A team of engineers—three from NASA Glenn and one from Boeing Phantom Works—has earned NASA's 2008 Software of the Year Award for the development of a general-purpose program used to perform trajectory performance studies for a wide variety of vehicles including aircraft, rockets, satellites and interplanetary vehicles.

The prestigious Software of the Year Award recognizes developers of exceptional software created for or by NASA and owned by NASA.

The members of the winning team are John Riehl, Waldy Sjauw and Robert Falck of NASA Glenn, and Stephen Paris of Boeing Phantom Works, Boeing's advanced, central research-and-development organization.

The team developed Optimal Trajectories by Implicit Simulation, version 4 (OTIS4), which utilizes state-of-the-art numerical integration and optimization technologies to predict how a vehicle will perform or determine how best to fly it. Data generated by the program allows a variety of studies to be accomplished including vehicle and sub-system design trades, guidance studies, error analyses and mission planning.

"With OTIS4, users can seamlessly generate optimal trajectories and parametric vehicle designs simultaneously with flight paths to any of the major bodies in the solar system," Falck cited. "OTIS4 also can be used to solve non-aerospace continuous time optimal control problems."

The software recently was used to conduct a launch abort analysis of the Orion Crew Exploration Vehicle. Its highly generalized modeling capabilities enable developers to generate more detailed simulation as the vehicle and mission design advance without abandoning the basic simulation framework. More realistic constraints can be added and design options easily traded off to obtain insight into the final design.

Photo by Bridget Caswell 2008-4366

The OTIS4 team participating in one of many videoconferences. Pictured, left to right, Sjauw, Falck, Riehl and Paris (on monitor at Boeing).

NASA's In-Space Program funded much of the development for OTIS4, which is widely used throughout the U.S. aerospace industry. However, distribution of this software is subject to the export control laws of the country.

For more information on OTIS, visit http://otos/grc/.nasa.gov/background.html.

SPACE ACT AWARDS

Software of the Year is one of the top two Space Act Awards, along with Invention of the Year, awarded annually by NASA's Inventions and Contributions Board (ICB). Civil servant and support service contractors are eligible for the monetary

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PLUS...Promotions, Awards, Obituaries and more

Straight *from the* Director

Center Director Dr. Woodrow Whitlow Jr.

Delivering on our Commitments—with Style

When we began transitioning activities toward more developmental work a couple years ago, we knew it would take planning, restructuring and creativity. Most importantly, we knew it would take commitment to quality.

That commitment led to reshaping the center leadership team and workforce as well as improving our infrastructure. Many teams were involved in months of planning, collaborating and advocating to prove that we have the technical competence and capabilities to manage and implement major space flight projects for the agency while maintaining excellence in aeronautics and space research.

Last year, we began seeing the fruits of our efforts by making significant contributions to NASA's mission. This included delivering the Glenn designed and manufactured full-scale components of the Ares I–X launch vehicle demonstrator to NASA Kennedy and our Combustion Integrated Rack and Multiuser Droplet Combustion Apparatus hardware to the International Space Station. We provided the Traveling Wave Tube Assembly for the Lunar Reconnaissance Orbiter and conducted tests that demonstrated that NASA's Evolutionary Xenon Thruster ion propulsion system is a viable option for long-term, deep-space science missions. We've progressed on our modifications to the Space Power Facility to perform both vibration and acoustic testing for the Orion project as well. Researchers developed technologies to achieve aircraft engine noise reductions goals and improve in-flight fuel efficiency, and engine fuel burn reduction technologies were demonstrated using alternative aviation fuel.

While I know we are proud of these accomplishments from a technical standpoint, we should be equally proud of how we worked within the Glenn organization and with our customers to meet these goals and milestones. We've made great strides over this past year in breaking down communication barriers, reducing skepticism and demonstrating that we can work together with our customers no matter the geographic distances that separate us.

Feedback from our NASA team members/customers has been astoundingly positive. Some of their unsolicited comments include: "Glenn is one of the best performing centers;" "Your team is doing a great job supporting Orion;" "Team members are always responsive, comprehensive and a pleasure to work with;" "I cannot think of any other way the collaboration could be going;" "The KSC/GRC/ASRC engineering team has set a high standard for other teams to follow;" and "GRC activities and products are of high quality. No rework required."

Our responsiveness to our customers and demonstrated skills has not only gained us the respect of our agency partners, but it has also earned us additional work responsibilities.

I knew that when we began earning new work we would need to deliver on our commitments—no matter how challenging. We did that in 2008! I'm confident we will continue to do so as we begin the new year.

Software of the Year Among Glenn's 11 Space Acts for FY 2008

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rewards—up to $100,000 per invention—that reflect the value of the outstanding technological innovation or scientific discovery supported, which was funded or applied by NASA for aeronautic or space activities.

The ICB awarded a total of $181,975 for Space Act Awards to the following Glenn scientists and engineers during fiscal year 2008:

• Rate-based Linear Parameter-varying Model Predictive Controller by Jonathan DeCastro, Arctic Slope Regional Corp. (ASRC) in the Communications, Instrumentation and Controls Division

• Hybrid Kalman Filter/In-Flight Diagnosis by Takahisa Kobayashi (ASRC) and Donald Simon, Communications, Instrumentation and Controls Division

• Multidimensional Contact Angle Measurement Device (MCAMD). An ICB Exceptional Award winner, developed by Dr. David Chao and Dr. Negli Zhang (OAI), Space Processes and Experiments Division. This technology also garnered the 2008 R&D 100 award, which included Dr. John Sankovic, and was nominee for NASA Invention of the Year.

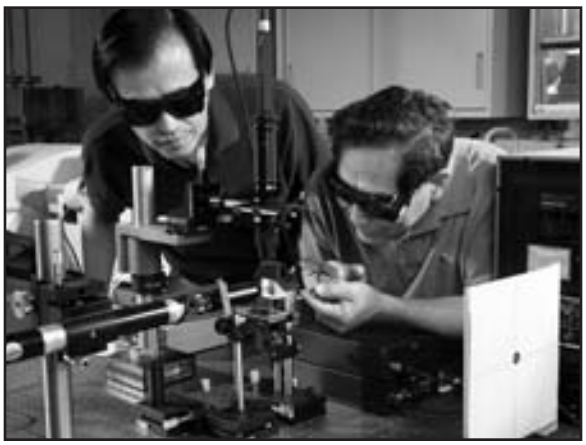

Photo by Marvin Smith 2008-2681

Dr. Chao and Dr. Zhang at the MCAMD.

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News and Events

Buzz Aldrin Shares Insights

During the Lunar Dust Filtration and Separations Workshop, held at the Ohio Aerospace Institute November 18–20, Gemini 12 and Apollo 11 astronaut Buzz Aldrin shared his experiences and gave recommendations for dealing with lunar dust. The goal of the Glenn-hosted workshop was to address the issues and challenges of particulate matter removal from the cabin atmospheres in the Altair Lunar Lander, Lunar Outpost Habitat and in pressurized rovers. The workshop provided many recommendations for strategic near-term and long-term technology development pursuits. Over 30 Glenn employees attended, including 14 participants from industry and academia. As an added bonus, Aldrin addressed members of Glenn's Young Professionals Group, sharing highlights of his space travels and stressing the importance of patience and persistence in their work at NASA.

Photo by Marvin Smith C-2008-4220

Photo by Bridget Caswell C-2008-4347

Leadership Spreads Holiday Cheer

Fa La La La La. Glenn's senior leadership team hosted its annual Center Holiday Gathering on December 5. Center Director Dr. Woodrow Whitlow Jr. and senior leaders served refreshments and shared holiday cheer with employees. Entertainment included a lighthearted Year In Review video of agency and Glenn events and senior personnel and a Fun Facts Contest on how well employees know Glenn managers. Richard Cavicchi took first place for 15 correct answers in the Fun Facts Contest. A three-way tie for second place went to Maureen Messich, Anne Kelly and Tracy Stidham for 13 correct answers. All four winners will receive lunch with Center Director Whitlow. The Fun Facts answers are posted at http://gbulletins.grc.nasa.gov/main/Fun_Facts_Contest.doc.

Native American Contributions

November is the designated month for our nation's Native American Indians Heritage Observance. Glenn's Native American Advisory Group (NAAG) celebrated by supporting two events this year—the 30th anniversary of the American Indian and Science Engineering Society (AISES) national conference in Anaheim, Calif., and the annual awareness program at Glenn. NAAG members participated in panel discussions and displays and proudly cheered the presentation of the 2008 AISES Leadership Award to NAAG member Joseph Connolly, an aerospace engineer in the Communications, Instrumentation and Controls Division and AISES Professional Sequoyah Fellow. Connolly, a Haudenosaunee (Iroquois) and member of the Six Nation of the Grand River, was recognized for outstanding community service through NAAG and AISES. AISES is a national, nonprofit organization that nurtures development of American Indian and Native Alaskans communities by building on their contributions in science, engineering, technology and mathematics disciplines, while honoring traditional Native values.

Photo by Raquel Redhouse

AeroSpace Frontiers 2008 Year In Review

Glenn Ships Ares I–X Segments

In October, 11 steel cylinders, designed and built for the Ares I–X/ Upper Stage Simulator, left the center and boarded the Delta Mariner vessel docked on the Ohio River in Wellsville, Ohio, and set sail for NASA Kennedy in Port Canaveral, Fla. The components represent the completion of the first manufacturing activity at Glenn of a full-scale space launch vehicle demonstrator in two decades.

C-2008-976

Post-Flight Crew Visits

Crew members representing Space Shuttle missions STS–122, STS–123 and STS–124 and International Space Station Expeditions 16 and 17 visited Glenn last year. Mission highlights included the first expansion of the station's living and working space in more than 6 years.

Flying Laboratory

In January, Glenn welcomed back NASA's S–3 Viking aircraft, which underwent modifications to transform the former carrier-based military airplane to a state-of-the-art research aircraft. The aircraft is scheduled to conduct icing research for NASA Aviation Safety Programs in partnership with the Federal Aviation Administration during the 2009–2011 time frame.

C-2007-2657

Green Technology

Throughout the year, Glenn held a series of forums, called Global Research into Energy and Environment at NASA (GREEN), to promote the center's research and facilities constructed for developing technology in alternative fuels and renewable energy. Facilities frequently toured include the Research Combustion Laboratory, the Alternative Fuel Research Laboratory and the Fuel Cells/Batteries Test Facility. Two recent additions, include the Bio Fuel Green House and Solar Power Plant, with two concentrators capable of generating 1.5 kilowatts (pictured).

C-2008-3304

Happy Anniversary, NASA

On October 1, the official date of NASA's 50th Anniversary, Center Director Dr. Woodrow Whitlow Jr. presided over the celebration by making the first cut in a celebratory cake at Lewis Field. Glenn organized a variety of internal and outreach activities during this historic year.

A Look Inside NASA Glenn

Lewis Field and Plum Brook Station opened their doors to the public this summer as part of Glenn's celebration of NASA's 50th Anniversary. More than 37,000 people visited the two-day open house events conducted in Cleveland and Sandusky.

C-2008-1239

Employees and Retirees Gather

Generations came together to celebrate NASA's 50th Anniversary on July 17–18. Over 300 retirees returned to Glenn for a retiree reunion that concluded with an employee and retiree picnic.

C-2008-1798

Hardware Delivered to ISS

When the Space Shuttle Endeavour lifted off in November, it carried two major pieces of Glenn-developed hardware: the Combustion Integrated Rack (CIR) and the Multiuser Droplet Combustion Apparatus (MDCA), as well as four Glenn experiments. Glenn designed, fabricated and tested the hardware over the last 10 years.

Hardware Certification

A centerwide effort earned the Aerospace Standard 9100, awarded by the National Quality Assurance, USA registrar in January. This put Glenn in an elite group of aerospace industry organizations that produce, and continually improve, safe, reliable products that meet or exceed customer and regulatory requirements.

C-2008-1004

First Annual Center Awards

On July 29, Center Director Dr. Woodrow Whitlow Jr. and Deputy Director Ray Lugo led co-workers, families and friends in saluting the center's "Best of the Best" among researchers, engineers, technicians and support assistants at the first annual Center Awards Ceremony.

Glenn Earns Eleven Space Acts

Continued from page 1

Photo by Marvin Smith 2007-2513

Dr. Okojie working with silicon wafer in Glenn's clean room.

•MEMS packaging Technique & Chip Fabrication for Hi-Temp Harsh Environment Silicon Carbide Pressure Sensors developed by Dr. Robert Okojie, Sensors and Electronics Branch. This technology also was an ICB Exceptional Award winner and shared the honor of being Glenn's nominee for NASA Invention of the Year.

•NASA NESSUS6.2c, developed by David Riha, Southwest Research Institute (SWRI), Dr. Shantaram Pai, George Stefko, Dr. Christos Chamis, Dr. Pappu Murthy, Ben Thacker (SWRI) and Subodh Mital, University of Toledo, from the Structures and Materials Division; and Vinod Nagpal, N&R Engineering and Management Services from the Program and Project Assurance Division.

•Multi-Mode Guided Wave Scanning Methodology for Characterizing Advanced Materials developed by Dr. Donald Roth and Laura Cosgriff (CSU) Communications, Instrumentation and Controls Division, and Richard Martin (CSU).

•Simultaneous Non-Contact Precision Imaging of Microstructural and Thickness Variation in Dielectic Materials Using Terahertz Energy. This technology was also a 2008 R&D 100 award developed by Dr. Donald Roth.

•Atomic Oxygen Textured Surfaces for Blood Glucose Monitoring Relating to Control of Diabetes. Bruce Banks (ALPH), Space Environment & Experiments Branch, is the recipient of an ICB Exceptional Award for the second year in a row.

•Optical Actuation Technology developed by Dr. Grigory Adamovsky, Communications, Instrumentation and Controls Division, Sergey Sarkisov, SS Optical; and Michael Curley, Alabama A&M University.

•Cellular Reflect Array Antenna developed by Dr. Robert Romanofsky, Communications, Instrumentation and Controls Division

Banks

To learn more about these innovations or to apply for Space Act Awards, contact Laurie Stauber, Glenn's awards liaison officer, Technology Transfer & Partnership Office, at 216–433–2820.

—BY S. JENISE VERIS and LAURIE STAUBER

Calendar

JANUARY THIRD SATURDAY EVENT: Lake Erie and NASA have plenty of connections. On Saturday, Jan. 17, visitors will get a view of "Lake Erie Through NASA's Eyes" during the January Third Saturday event at the Visitor Center. Presentations by a NASA pilot and engineer are scheduled for 11 a.m. and 1 p.m. Contact the Visitor Center at 216–433–9653 or log on to http://www.nasa.gov/centers/glenn/events/vcevents.html.

SLIMATHON 2009: It's time to get your team together for the Jan. 12 registration deadline! Let the Fitness Center staff and your team help keep you accountable for lowering OR maintaining your body fat percentage during the upcoming year. Don't miss out on the prizes, fun and satisfaction of doing something for your health! Questions? Call 216–433–6313 or visit the Web site at http://smad-ext.grc.nasa.gov/shed/gov/fitness/.

RETIRED WOMEN'S LUNCHEON: The February NASA Retired Women's Luncheon will be Thursday, Feb. 19 at noon at Mapleside Farm Restaurant, 924 Pearl Road, Brunswick. Please contact Gerry Ziemba, 330-273-4850, if you plan to attend. Luncheons are held the third Thursday of February, May, August and November.

LESA/IFPTE MEETING: Local 28, will hold its next monthly membership meeting on Wednesday, Jan. 14, at noon in the Employee Center.

AFGE MEETING: AFGE Local 2182 will hold its next monthly membership meeting on Wednesday, Feb. 4 at 5 p.m. at Denny's Restaurant, 25912 Lorain Road, North Olmsted.

FEBRUARY THIRD SATURDAY EVENT: On Saturday, Feb. 21, the Visitor Center's Third Saturday event focuses on "NASA at the Movies." Contact the Visitor Center at 216–433–9653 or log on to http://www.nasa.gov/centers/glenn/events/vcevents.html.

NATIONAL ENGINEERS WEEK: The Educational Programs Office is sponsoring an opportunity to participate in the National Engineers Week (NEW), celebrated February 15-21, 2009.

PM CHALLENGE SET: Mark your calendars for NASA PM Challenge 2009, February 24-25, 2009 in Daytona Beach, Florida. Find out more about the event at http://pmchallenge.gsfc.nasa.gov/.

LERCIP INTERN HOUSING NEEDED: Many of the LERCIP/OAI interns will be looking for temporary affordable summer housing. Interns begin arriving at Glenn in May and June for internships lasting from 10 to 14 weeks. If you are interested and would like more information, please contact, Ila Pearl, OAI, 440-962-3034 or email IlaPearl@oai.org.

People

NASA Small Business Awards

Glenn employees have earned the 2008 NASA Procurement Team of the Year and the Technical Person of the Year awards. NASA Deputy Administrator Shana Dale and Assistant Administrator for the Office of Small Business Programs (OSBP) Glenn Delgado presented the awards to team members attending the 1st Annual NASA Small Business Symposium and Awards Ceremony in Washington, DC, Nov. 18.

The Plum Brook Reactor Facility (PBRF) Decommissioning Source Evaluation Board (SEB) has earned NASA's Small Business Advocate Award for Procurement Team of the Year. The award recognizes the team's extensive research and innovation to maximize the waste management competition, which helped secure a Service Disabled Veteran Owned Business set aside for the procurement and enabled Glenn to exceed its goals in this important socio-economic category.

PBRF Decommissioning SEB members attending the awards ceremony with presenters, left to right: NASA Deputy Administrator Dale, Jose Vega, Melissa Merrill, Jerald Kennemuth, Keith Peecook, Robert Lisy, Helen Ceh, Robert Corban, Robert Lallier and AA for OSBP Glenn Delgado. Not pictured: Robert Bayda and Lawrence Schroeder

Dr. Michael Meador, Polymers Branch, earned the Small Business Advocate of the Year for involving Historically Black Colleges and Universities and Small Disadvantaged Businesses in materials research at Glenn. As chairman of the Technical Review Committee for the NASA Center for High Performance Polymers and Composites (HPPAC), Meador has leveraged HPPAC resources and talents to support ongoing NASA work.

Dr. Meador

Best Paper in Aerospace

Dr. Agui

Dr. Juan Agui, Space Processes and Experiments Division, co-authored an award-winning paper titled, "Experimental Techniques for Measurements of Vorticity and Strain Rates in Compressible Turbulence Interactions with Shock or Expansion Waves," with Savvas Xanthos, Minwe Gong and Dr. Yiannis Andreopoulos from the City College of New York. The paper, which includes Agui's thesis work on shock wave and turbulence interactions, earned the Charles Sharpe Beecher Prize for "Best Paper in Aerospace" presented at the Institution of Mechanical Engineers (UK), in Prague (Czech).

Professional Achievement Award

Narvaez-Legeza

Adabelle Narvaez-Legeza received the Professional Achievement Award at the 2008 Hispanic Engineer National Achievement Award Conference (HENAAC), Oct. 9-12, in Los Angeles. Narvaez-Legeza, who is Glenn's chief engineer for the Ares I–X Upper Stage Simulator project, joined NASA Johnson's Deputy Director Ellen Ochoa and others honored for their expertise and impact on youth in the Hispanic community.

Owens Joins Community and Media Relations Office

Owens

Jeannette Owens was selected to the position of public affairs specialist in the Community and Media Relations Office. She is responsible for planning communication strategies and informing the public of Glenn projects and events in the Facilities and Test Directorate, Orion Project Office, Space Operations Project Office, Business Development and Partnership Office and the Technology Transfer and Partnership Office. Owens began her NASA career in 1990 and brings a wealth of government knowledge gained in the Human Capital Development Branch serving as a human resource specialist for the past 14 years.

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DEADLINES: News items and brief announcements for publication in the February issue is noon, January 16. Larger articles require at least 1 month notice. Submit contributions to the editor via e-mail, doreen.b.zudell@nasa.gov, fax 216-433-8143, phone 216-433-5317 or 216-433-2888, or MS 3-11. Ideas for news stories are welcome but will be published as space allows.

WINNER 2008 APEX AWARDS FOR PUBLICATION EXCELLENCE

Glenn's Extraordinary CFC Effort

Center Director Dr. Woodrow Whitlow, Jr. often notes how Glenn's successes can be traced to its talented people united in extraordinary team effort. The 2008 Combined Federal Campaign (CFC) was no exception.The Glenn family donated over $413,000—exceeding the goal of $360,000—to aid those in need in our community, across the Nation and around the world.

Over a period of four months, the CFC committee, led by Chair Gloria Richards and Co-Chair Rick Reames, focused their efforts on inspiring, motivating and encouraging coworkers to "Go the Extra Mile," in sharing with those less fortunate. As a result, the committee realized a participation rate of 55.94 percent.

"Our phenomenal year can be attributed to the support of management and heart-felt ingenuity demonstrated by individuals and groups across the center," Richards said.

Notable new additions to this year's CFC fundraising effort was the Fitness Center Dumbbell Drive, where old dumbbells were sold for 25 cents with all proceeds donated to CFC's undesignated fund; Main Café/Pizza & Pop, with a portion of the proceeds donated to CFC; and the 50/50 Raffle.

The Safety and Mission Assurance Directorate took top honors for bake sale donations. Colleen Davis-Pearson, CFC chair, led the effort that featured directorate members and center employees donating bakery as well as purchasing bakery.

The campaign also enjoyed an increase in baskets—from 32 to 50—donated for the raffle, which drew a record crowd and donations totaling more than $10,000. A lot of "elbow grease" went into filling "Tool Basket," this year's top-selling basket donated by the center's Manufacturing Division. Tonya Merriweather prepared and sold home-made lunches to raise funds to purchase quality tools for the basket.

Perhaps the most creative addition to this year's campaign was the CFC video created with the expertise of the Imaging Technology Center and the cooperation of Glenn CFC beneficiaries to highlight local charitable organizations. Its value to the 2008 campaign was cited during the CFC Appreciation Breakfast and later touted in the keynote address by the North Coast CFC vice chairman Doug Shelby.

"I've discovered that the folks at Glenn have hearts as big as their brains," Shelby said. "North Coast CFC is grateful to Glenn for its longstanding tradition of leadership among the federal agencies that help us realize our goals annually."

—BY S. JENISE VERIS

Photo by Marvin Smith 2008-4442

Dr. Whitlow, seated left displays CFC check with the 2008 CFC committee: Richards, Reames and Ken Aguilar, director of Center Operations. Standing, front: Helen Ceh, Valarie Roundtree, Renee Batts, Luaren Clayman, Anne Power, Linda McMillen, Bernice Beznoska, Erline Trsek. Standing, back: Pearson-Davis, Merriweather, Karen Meinert, Elizabeth McQuaid, Blanche Preusser, Robert Grossman, Eddie Santos and Steve Pavlosky

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