

# ORBITER NEWS

News, announcements, and more.

## Three Aerospace Employees Honored as Women of the Year

August 31, 2022

Last week, Aerospace Women's Committee (AWC) honored three employees at its annual Woman of the Year (WOTY) Awards as part of this year's Women's Week celebrations. For 50 years, AWC has worked to expand opportunities for women and increase diversity throughout the industry.

The WOTY Awards serve as an opportunity to recognize the achievements of colleagues at Aerospace and celebrate their successes. Julia Carter, Trina Kilpatrick and Navneet Mezcciani are this year's Women of the Year recipients, in recognition for their achievements at Aerospace, their leadership and community service.



"Women throughout Aerospace have fought to share opportunities of equality with our community and members," said Britany Chamberlain, AWC National President. "There are so many people who helped us get to where we are, and we have them to thank for the progress we have made."

In celebration of Women's Week and their 50th anniversary, AWC hosted a variety of events for employees. SpaceX President and COO Gwynne Shotwell delivered a keynote presentation and spoke about the importance of taking risks at times to advance one's career. AWC also hosted a clothing drive, speed mentoring event, lightning talks and a fun run, creating many opportunities for everyone across Aerospace to get involved and celebrate.



*Employees from across Aerospace gathered to honor the 2022 WOTY Award winners and AWC members from the past 50 years.*

“This week let’s remember those who forged the path before us and look forward to what is next for the future generations,” said Chamberlain.

The first WOTY Awards was celebrated in 1975. Since then, AWC has continued to celebrate the women of Aerospace and their contributions to the corporation, their communities and beyond. This year, AWC received a record number of nominations. After careful consideration, three individuals were selected, highlighting the diverse contributions and backgrounds of the women at Aerospace making a big impact.

“AWC has had many significant operation, policy and cultural changes that they have driven over the years and have had a huge impact spanning five decades” said Kevin Bell, Senior Vice President of the Space Systems Group and Executive Sponsor of AWC. “Congratulations to all the AWC members for that sustained drive, and I look forward to your impact in the future.”

## Meet the Winners

**Julia Carter** has been a dedicated employee at Aerospace for 44 years. After joining the corporation in 1978, Carter worked as a clerk before continuing her studies while working full time at Aerospace, earning her BA in Business Administration from California State University, Dominguez Hills. She currently works as an administrative specialist IV in the Space Systems Architecture Division. Throughout the years, she has received numerous awards from the corporation and served as a mentor for others. Giving back has always been a priority for Carter, who is a former secretary of AWC and is a

consistent volunteer for the Robert H. Herndon Memorial Science Competition and the Angel’s Tree donation campaign.



*Aerospace President and CEO Steve Isakowitz and Julia Carter, Administrative Specialist IV in the Space Systems Architecture Division.*

She also gives back in her community through her church, feeding the homeless and collecting school supplies for local students. Carter has volunteered at the YMCA for many years as the Basketball Division Youth Chair, Fundraiser Coordinator and as an assistant youth basketball coach. Along with her husband and children, Carter was awarded the Family of the Year Award by the local Hawthorne YMCA.



*Isakowitz and Trina Kilpatrick, Manager of Events and Conferences.*

**Trina Kilpatrick** has been awarded various certificates and awards from Aerospace, including numerous SPOT awards over the years. As the Events and Conferences Manager, she, along with her “dream team,” are responsible for coordinating events at Aerospace. Kilpatrick has been involved with a wide variety of events at Aerospace, including former Aerospace CEO Dr. Wanda Austin’s convocation and retirement, president and trustee awards, a host of technical workshops and tours among many others. In 2020, Kilpatrick was awarded a Corporate Award as a member of the COVID-19 Response Team.

Outside of Aerospace, Kilpatrick gives her time to help those in need. Though donations, fundraising and volunteering in her community, Kilpatrick has made a real difference to a variety of organizations like the Ronald McDonald House Charities of Southern California and the Los Angeles Mission.

**Navneet Mezcciani** was born and raised on the island nation of Bahrain. Growing up, she experienced uncertain times, having to carry a gas mask along with her backpack to school. After graduating high school at 15, Mezcciani enrolled at the University of Alabama, Huntsville, where she graduated Summa Cum Laude at age 19 as the only woman graduating in Computer Engineering. After working at NASA and Boeing, Mezcciani studied at the University of Southern California where she received a Master of Science degree. She currently works as the Assistant Principal Director of International Partnerships.



*Isakowitz and Navneet Mezcciani, Assistant Principal Director of International Partnerships.*

In 2010, Mezcciani joined Aerospace and was awarded the Wintroub Fellowship. She has been recognized for her excellence at Aerospace, by leaders in DoD organizations, and by allied nations like Australia, Canada, Japan, Saudi Arabia and the United Kingdom. Mezcciani also received the corporation’s Hero Pin three times in addition to receiving the 2022 Corporate Award for Growth in Our Value. Outside of Aerospace, she enjoys giving back to her community though leading STEM days at schools across Los Angeles County. Mezcciani is an accomplished writer, designer and painter, often donating her work to different organizations.

“These women are truly inspiring and are key contributors to the amazing community we have here at Aerospace,” said AWC National Vice President Manzar Chaudhry.

Congratulations to Julia Carter, Trina Kilpatrick and Navneet Mezcciani for your achievements and to AWC for 50 years at Aerospace!



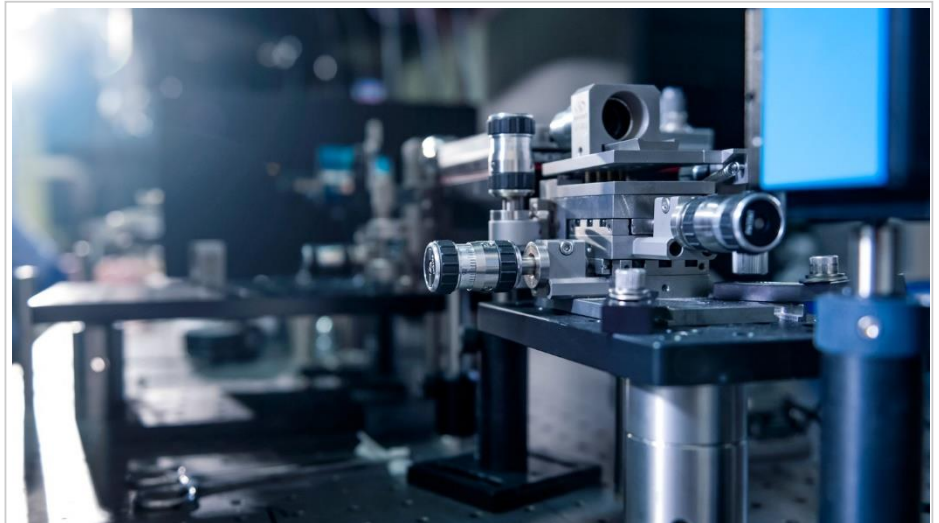
# Aerospace's GLINT Accelerates the Adoption of Laser Communication

August 23, 2022

Increased activities in space require moving faster, lighter and with higher precision. While space communications have traditionally relied on transmitting information via radio waves, The Aerospace Corporation is facilitating laser communication (lasercom) research and development to equip customers for the future.

Previously, two AeroCubes successfully transmitted data via lasercom systems for the first time—a milestone that displayed the viability and unlocked further possibilities of space-to-ground optical communications utilizing lasercom technology. Lasercom enables more data to be transmitted at quicker speeds, a quality that will be particularly valuable for intersatellite operations, cislunar missions and beyond.

An engineering team at Aerospace is now advancing the capabilities and adoption of lasercom, also known as optical communication, by transitioning traditionally larger terminal technology into a smaller form. Known as the Gbps Lasercom Innovative Nano Terminal (GLINT), the compact hardware prototype—responsible for receiving and sending data through laser pointing, acquisition and tracking—enables faster data speeds at a lower cost and impact to the spacecraft host.



*With much industry interest in lasercom, Aerospace is adopting innovative approaches and pursuing research and development opportunities to accelerate the adoption of lasercom technology.*

“Space-based laser communication has been recognized as a future technology, promising high data rates, while CubeSats have been used as vehicles for testing,” said Joel Gallegos, Associate Member of the Technical Staff in Aerospace’s Vehicle Systems Division and the project Principal Investigator. “GLINT started out as a proof of concept to illustrate that it’s possible to replicate the functionalities of a bigger lasercom terminal on a miniaturized scale.”

## Smaller and Speedier

One of the biggest challenges for the GLINT team was its approach towards transferring lasercom technology—usually found onboard larger spacecraft—into a CubeSat-friendly form that was still effective. Prior lasercom-

equipped CubeSats have commonly relied on reaction wheels and thrusters to passively point at a target. This method of maneuvering has created opportunities for improved accuracy and data rates.

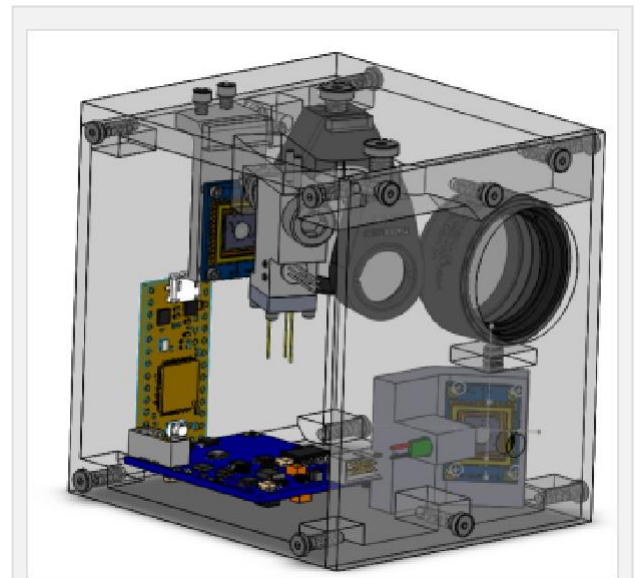
The GLINT team sought to develop a mini lasercom that could achieve a higher level of pointing accuracy while also abiding to the size of a 1U CubeSat. The solution involved starting from the traditional lasercom terminal structure and introducing novel technology.

A large lasercom terminal uses a camera and quad detector to acquire and track its target. While GLINT utilizes a quad detector in similar nature, the team swapped the camera with a microelectromechanical systems (MEMS) mirror.

This alteration transforms the terminal into a significantly low size, weight and power (SWaP) design. GLINT features higher pointing accuracy and improved control, increasing the current CubeSat data rate to more than 10 times. The team has developed an initial prototype and is in the process of building a second version that will undergo testing and validation.

## Advancing the Lasercom Field

At present, radio frequency communication has had a major role in the space domain due to the established infrastructure that supports this type of wireless communication. While the cost of laser communication has been one barrier in its usage, the team sees GLINT’s low SWaP and expense as a way to combat this challenge and ultimately accelerate the proliferation of lasercom technology in space going forward.



*Known as the Gbps Lasercom Innovative Nano Terminal (GLINT), the compact hardware prototype enables faster data speeds at a lower cost and impact to the spacecraft host.*

“There has been a lot of interest in lasercom, but it has been a challenge to achieve this level of maturity,” said Dr. Austin Lee, Senior Engineer Specialist in Aerospace’s Vehicle Systems Division. “The elevated technical performance and cost are key elements of GLINT. By staying small, the development, manufacturing and launch cost of GLINT is at a minimum—factors that will expedite the progression and expansion of lasercom for the space enterprise.”

GLINT aligns with the continued interest in sophisticated CubeSat technologies and the need to move with increased agility and accuracy. With the space environment rapidly increasing, faster data rates will become necessary to meet multiple customer needs. The speed of lasercom also presents the ability to relay critical, timely communication in a more secure manner for near real-time decision-making.

“New laser communication technologies are gaining value and importance, and will continue to do so,” said Gallegos. “Made possible through Aerospace’s self-funded research program, GLINT has provided us the opportunity to explore this area of interest and demonstrate lasercom efforts that could possibly change and shape the future of space.”

*This article has been **published on Aerospace.org**.*

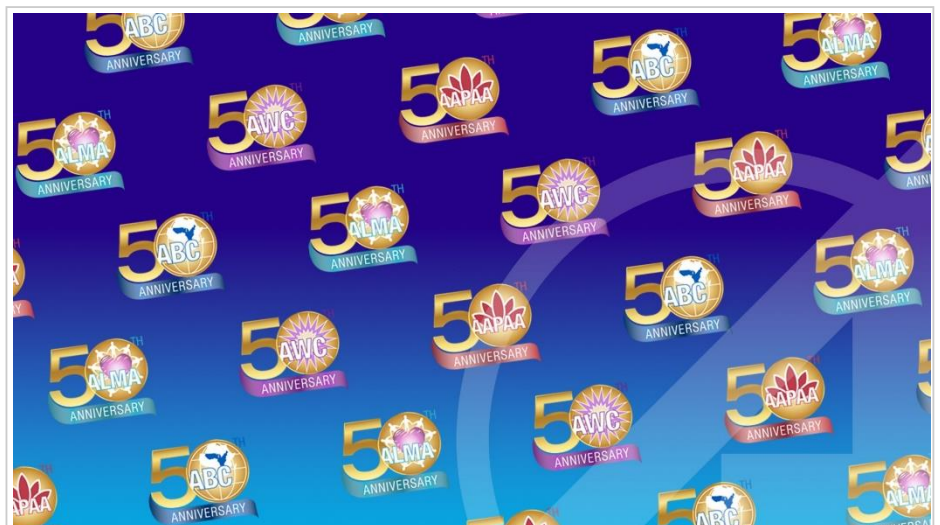
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## 50 Years at Aerospace: Four ERGs Celebrate Major Milestones

August 18, 2022

At Aerospace, commitment to our people has long been a core value for the corporation and is essential to strengthening a culture that continues to inspire and empower innovation, collaboration and opportunities to make a difference.

Aerospace’s employee resource groups (ERGs) have played an invaluable role in helping shape this culture, including advancing diversity, equity and inclusion (DEI) within the workforce and enabling employees to appreciate and learn more about their colleagues’ rich heritages and vibrant communities.



*Employees can download the ERG 50th Anniversary wallpaper to get in the spirit of the celebration.*



Vice President Lyndon B. Johnson (L.) looks on as Dr. Ivan A. Getting prepares to sign the Aerospace Corporation Plans for Progress, co-signed by the Vice President. The Plan pledges stepped-up affirmative action in the field of equal employment opportunity.

*Aerospace was among the first companies in the country to voluntarily establish a Plan for Progress in 1961. To strengthen the company's long-standing commitment to those principles, the corporation's Equal Opportunity Committee was formed in 1972. In the same year, the Aerospace Asian-American Association (AAAA), the Aerospace Black Caucus (ABC), the Aerospace Hispanic Caucus (AHC), the Aerospace Women's Committee (AWC), and the Affirmative Action Advisory Committee (AAAC) were also formed.*

This year, four ERGs are celebrating their historic 50th anniversaries: the Aerospace Asian Pacific American Association (AAPAA), Aerospace Black Caucus (ABC), Aerospace Latino Member Association (ALMA) and Aerospace Women's Committee (AWC). These groups remain integral in supporting employees and their communities and continue to create a positive impact on the corporation today.

"We are so proud of all the work these ERGs and their members, both past and present, have done over the last five decades," said Via Van Liew, Principal Director of the Office of Diversity Equity and Inclusion. "Their commitment and dedication to supporting and sharing their communities at Aerospace and beyond is a testament to their passion and continuing legacy of advancing opportunities and effecting change for future generations."

In 1972, Aerospace President Ivan A. Getting made a proclamation founding the corporation's Equal Opportunity Committee. This led to the formation of what is now AAPAA, ABC, ALMA and AWC, which were formed in the same year.

While elements of these groups have evolved over the years, their continued dedication to increasing diversity and equal opportunity within the corporation and the broader industry remains the same.

"All of the ERGs support corporate DEI goals, with particular emphasis on enhancing cultural awareness, providing professional development, increasing visibility of career opportunities, and cultivating diversity, equity

and inclusion in the workplace," said Dr. Sherrica Holloman, ABC National President.

ERGs have been instrumental in creating more awareness and understanding of diversity within the broader Aerospace community. From organizing and presenting cultural awareness activities, educational and career development programs to inspiring the next generation through STEM and community outreach, ERGs continue to play a key role at the corporation, creating a better environment for everyone.

"I am heartened by the community that AWC and the other ERGs have built and the persistence that we all possess as we continue to build towards a workplace that demonstrates respect for all," said Britany Chamberlain, AWC National President. "I hope the broader membership will look to this milestone as a



Four Aerospace ERGs are celebrating their 50th anniversaries this year. In June, the ABC celebrated its 50th anniversary and the Juneteenth holiday with Dr. Wanda M. Austin, former Aerospace President and CEO, as the keynote speaker.



celebration of Aerospace's dedication to listening to women's voices and championing diversity."

To mark this occasion, Aerospace will host corporate-wide celebrations honoring the ERGs and their past and present leaders, all of whom contributed so much to inspire and pave the way for others to make the corporation what it is today. In El Segundo, an ice cream celebration will take place on Aug. 30. A celebration is also in the works for Chantilly, with more information to come.

"The 50th anniversary is an exciting milestone – it means that for five decades now, people like us have kept these groups going," said Susana Aguilar, ALMA National President. "All of my predecessors have brought their unique talents and enthusiasm and left their individual mark on the ERGs' and ALMA's history, and we are so excited to celebrate this occasion together."

In addition to celebrating together, each ERG is commemorating the occasion in unique ways.

- ♦ **ALMA** plans to celebrate during their upcoming Hispanic Heritage Month celebration, which takes place Sept. 15 – Oct. 15.
- ♦ **AWC** will celebrate with a variety of events in August for Women's Week/50th Anniversary, including a clothing drive, 2k/5k Fun Run/Walk and keynote speech by Gwynne Shotwell, SpaceX President and COO and former Aerospace AWC President and Woman of the Year Award winner.



*Ballet folklorico dancers perform traditional Mexican folk dances at ALMA's Cinco de Mayo event in 2012.*



*As part of its Women's Week celebrations each year, AWC hosts a number of activities that promote professional and personal growth. This year's events will be held both online and in person at Chantilly, El Segundo, Huntsville and Omaha.*



*Dim Sum, a traditional Chinese dish, was served at AAPAA's Lunar New Year event in early 2020.*



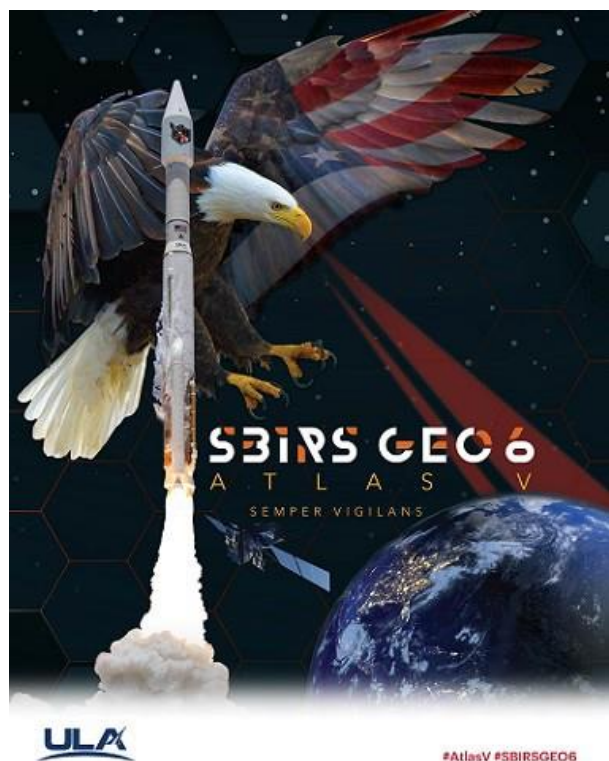
- **AAPAA** will host their Dr. Alexander C. Liang Asian Pacific American Achievement Award ceremony on Sept. 1 on Zoom and at AGO with a keynote speech from Cordell DeLaPena, Program Executive Officer for Military Communications and Positioning, Navigation and Timing, and Space Systems Command. Back in May, AAPAA hosted an event for Asian American and Pacific Islander Heritage Month and their 50th anniversary with guest speaker Xavier Lee presenting on “Cultural Confidence and Resiliency.”
- **ABC** celebrated their 50th with a signature event series in June, which included a keynote speaker event with Dr. Wanda Austin and an ABC Family Reunion and Juneteenth Celebration, as well as their 40th celebration of the Herndon Awards back in February. In a joint effort with AAPAA, the two ERGs raised \$11,000 for the Dr. Wanda M. Austin STEM Scholarship.

“Over the last 50 years, we have worked hard to advocate for ourselves and create the community we see today at Aerospace,” said Stacy Shimizu, AAPAA National Vice President. “This anniversary is a time to reflect on our histories, celebrate our culture and communities, and be proud of all the work we have done over the years.”

Aerospace extends its warmest congratulations to AAPAA, ABC, ALMA and AWC for 50 wonderful years and is looking forward to the next 50 years!

## Atlas V Launch Delivers Sixth and Final SBIRS GEO Satellite to Orbit

August 16, 2022



Thirty-four days after the last National Security Space Launch (NSSL), a United Launch Alliance (ULA) Atlas V launch vehicle lifted off from Space Launch Complex 41 on Aug. 4 and successfully delivered the sixth and final Space Based Infrared System Geosynchronous Earth Orbiting (SBIRS GEO) satellite to geosynchronous transfer orbit (GTO) for the United States Space Force (USSF) Space Systems Command (SSC).

The SBIRS GEO-6 mission used an Atlas V 421 rocket, which includes the bisector (two-piece shell) four-meter diameter extra extended payload fairing (XEPF), two strap-on solid rocket graphite epoxy motors (GEMs) and a single Aerojet Rocketdyne RL10C-1 engine Centaur upper stage. The SBIRS GEO-6 mission was completed in a little under four hours.

As with prior NSSL missions, The Aerospace Corporation conducted independent analyses and evaluations of the flight systems, working with USSF to augment ULA’s mission

assurance process to ensure the continued NSSL program's legacy of 100 percent mission success. Special attention was placed on first flight hardware items implemented for performance improvements and cost efficiencies.

Even though the SBIRS GEO-5 and SBIRS GEO-6 spacecraft are nearly identical, learning from the SBIRS GEO-5

mission was applied to the SBIRS GEO-6 mission to optimize the injection orbit, thereby significantly extending the SBIRS GEO-6 spacecraft's predicted lifetime on orbit and increasing resiliency. The launch marked the 95th successful launch of an Atlas V rocket, the 152nd launch for ULA, the ninth 421 configuration vehicle and the third Atlas V NSSL mission of 2022.

The launch marked the 95th successful launch of an Atlas V rocket, the 152nd launch for ULA, the ninth 421 configuration vehicle and the third Atlas V National Security Space Launch (NSSL) mission of 2022. SBIRS is a high-priority USSF program that provides space-enabled capabilities to support U.S. military systems and consists of a constellation of satellites in both GEO and highly elliptical orbit (HEO).

The SBIRS GEO-6 satellite, like the SBIRS GEO-5 satellite, is built on Lockheed Martin's modernized LM2100 Combat Bus, which provides enhanced resiliency and cyber-hardening against growing threats, as well as improved spacecraft power, propulsion and electronics. The SBIRS constellation of missile warning satellites is equipped with powerful scanning and staring infrared surveillance sensors that continually protect the nation.

"My sincere thanks to our SSC and Aerospace teammates on the success of another Atlas V launch," said John Steinmeyer, Mission Director for the Atlas V SBIRS GEO-6 mission and Executive Director of Assured Access to Space at the Space Force's Space Systems Command (SSC). "This SBIRS GEO-6 mission supplements and completes the current constellation of missile warning and battlespace awareness sensing capabilities, which continues to strengthen our nation's warfighters. The relatively smooth campaign and count, and few launch observations are a testament to the effectiveness of our team. The long-standing partnership between the Space Force and Aerospace are what make missions like these a success!"



*The next Atlas V US Space Force National Security Launch mission is expected to be in the second quarter of 2023.*

*Written by Craig Larson, General Manager of Launch Operations Division.*

# Interns at PSL and xLab Showcase Their Impact at Aerospace

August 11, 2022

Aerospace interns in the Physical Sciences Laboratories (PSL) and xLab had the opportunity to showcase their technical work and research recently during an Intern Poster Session event held on the El Segundo campus. More than 35 interns across a variety of departments were able to highlight their research to Aerospace's experts across the enterprise and discuss the work they've been doing at the company this Summer.

"Our interns are an integral part of our research programs," said Dr. Timothy Graves, General Manager of PSL. "Each year, they make key contributions to our teams, and the Poster Session was a great opportunity to see the depth of their work and the exciting research they have been conducting during their time here at Aerospace."

The event attracted hundreds of attendees, including Aerospace President and CEO Steve Isakowitz and Executive Vice President Dr. Wayne Goodman. Interns presented on a variety of topics, including a water-based micropropulsion system, plasma enhanced combustion, and detail-oriented project management in xLab.

Some interns spoke on topics and projects they began researching this summer as interns at Aerospace. While others like Emily Anne Vargas, an intern for the Materials Science Department and a Ph.D. student at the University of Southern California, utilized the research they are conducting at university to inform their topics and presentations.

"I am determining the effects of process parameters on pore structure and pore evolution of oxide-oxide ceramic matrix composites (CMCs)," said Vargas. "CMCs are lightweight, heat-resistant materials used in applications such as engines, heat exchangers, and gas turbine. The strength of a CMC relies of the microcracking in the pore network, which is something we want to be able to understand more with the work I am conducting here at Aerospace and at USC."



Research presented by the interns covered a wide range of topics.



For participating interns, the event proved to be a great learning experience, not only for honing their presentation skills to effectively communicate on technical topics, but also for managing and conducting their research projects. Engaging with subject matter experts at Aerospace, interns were able to learn from their colleagues and apply that knowledge to enhance their projects and presentations.

“I learned a lot more about materials and how they are synthesized,” said Vania Jiao, an intern for the Materials Science Department, who presented on how residual stress evolves as AgAl is deposited. “I studied mechanical engineering in school, so my materials knowledge was pretty basic. But I have been able to increase my knowledge and gain a lot of good experience through this project.”

While summer internships are coming to an end, for many of the students, their research and passion for space continues.



*The Intern Poster Session proved to be a great opportunity for interns to gain experience in sharing their research and presenting on their work.*

“I’ve met so many great people—that alone would make me want to come back to Aerospace,” said Jiao. “The work I did was very rewarding and gave me hands-on experience that I don’t think I would have gotten elsewhere.”

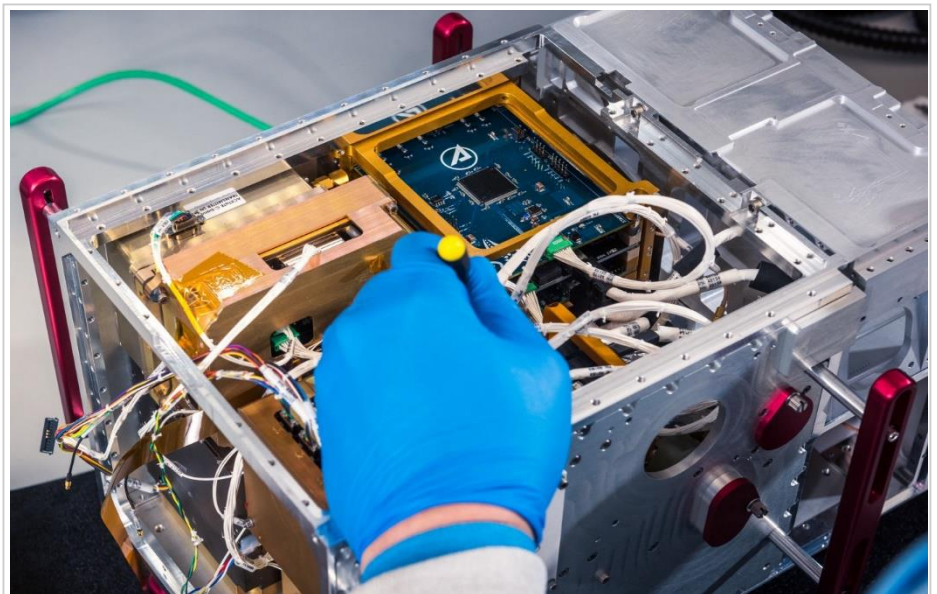
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## Small Satellite Challenges and Gaps

August 09, 2022

The rapid escalation of the production and launch of small satellites has revolutionized space. Aerospace has been at the forefront of CubeSat technology and the miniaturization of satellites since before the CubeSat standard was established — flying the world’s first containerized satellite over 20 years ago.

Leveraging the remarkable work of our labs to set the standard for reliability



*The Slingshot I modular assembly in the lab.*

and technology development within the small satellite community, our expertise has enabled the development of novel space architectures that include a mix of high-value assets, partnerships with industry to advance CubeSat capabilities and work with academia to advance new, transformational technologies.

*Aerospace's Catherine Venturini, Principal Engineer, Science and Technology Development, answered questions on [Aerospace's Medium channel](#) about what the future holds for small satellites.*

## **What are some of the biggest advancements in CubeSat / SmallSat technology in the past five years?**

It is amazing to see what has been achieved so far on these platforms. Technology advancements have allowed for the miniaturization of payloads and sensors to fit into small satellite platforms while still providing significant mission capability. The missions now being flown are producing high-quality scientific results, providing support for operational missions, or opening up new business opportunities in space.

The proliferation of LEO constellations has produced a lot of advancements in the industry — most notably in manufacturing and production. Multiple companies are running assembly lines for high-volume small satellite production or are scaling up production to support these constellations.

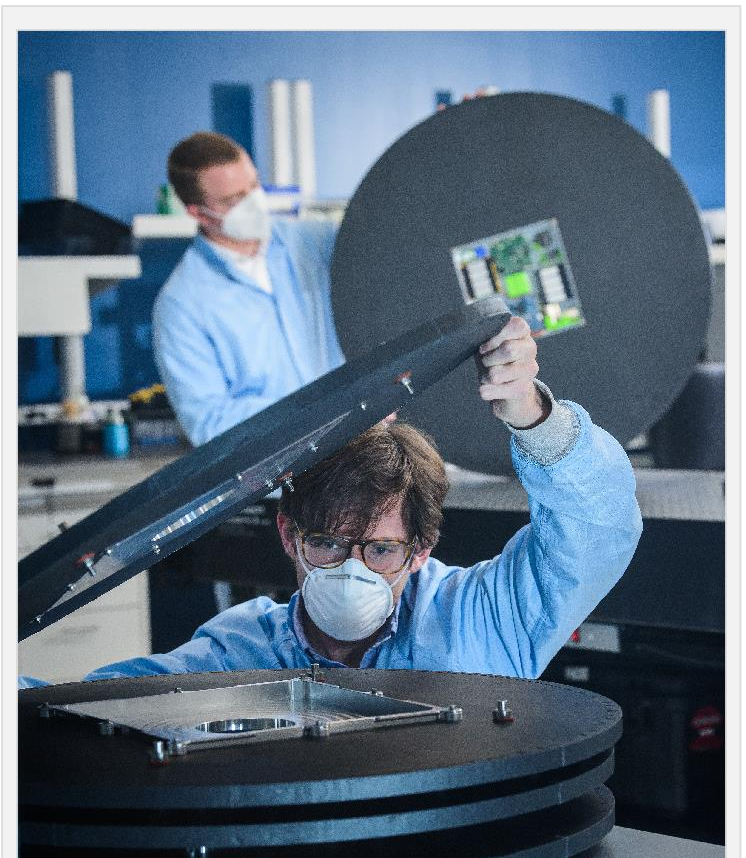
## **What challenges do these advancements present?**

Most of the challenges will be in the areas of space sustainability, space safety, cyber security, supply chain, and space traffic management. These are the key areas the community needs to invest in and advance for the benefit of all who want to operate in space. Navigating policy and licensing continues to be a struggle for many developers.

## **What is the most important thing happening at Aerospace with small satellite technologies, and why?**

Aerospace is always looking at those future hard problems and advancing capabilities. A couple of notable efforts are the [Slingshot 1 mission](#) and DiskSat.

Slingshot is using modularity, standard interfaces, open architectures, and autonomous technologies, leveraging the potential of open standards and non-proprietary interfaces to simplify and expedite payload development and integration. These technologies could usher in a new era of increased space system agility, resilience, and extended spacecraft lifespans by allowing for onboard components to be more efficiently upgraded or



replaced as needed.

DiskSat is a new satellite form factor that will be part of a NASA demo mission in 2024. The concept takes an alternate approach to satellite containerization, providing the benefits — standardized launch interface, low launch costs, and simple mechanical design — with large surface areas that can be dedicated to large antennas or instruments that need exposure to space, and high power.

Aerospace has been doing a lot of development in low SWAP optical communications, and rendezvous and proximity operations. We also continue to be thought leaders in space safety, space policy, cyber security and involvement with the Space ISAC, and supply chain work.

*Learn more about our technologies being showcased at the Small Satellite Conference in Logan, UT, August 6–11, 2022.*

### **How important is small satellite technology in the larger space enterprise? Is that role expanding?**

Small satellite technology is prevalent across academia, government, and industry so it's very important to the larger space enterprise. U.S. Government agencies are now leveraging commercial data and systems for current and future capabilities. They are also building and flying their own small satellites. We will only see more of this in the future with hybrid architectures of different types of satellites. At some point, we may not need to distinguish “small” satellites as they will become part of the satellite norm.

### **What are some of the biggest gaps in SmallSat development? What needs to be addressed?**

As we look to higher performance systems that can still fit into the smaller size satellite platforms, there are definite technical considerations that will need to be addressed. As interest grows to fly missions to GEO, the moon, and deep space, this will require advancements in on-orbit processing, autonomy, power, thermal management, and capable communications to handle larger data sets. Reliable and robust propulsion technology for maneuverability is also a necessity.

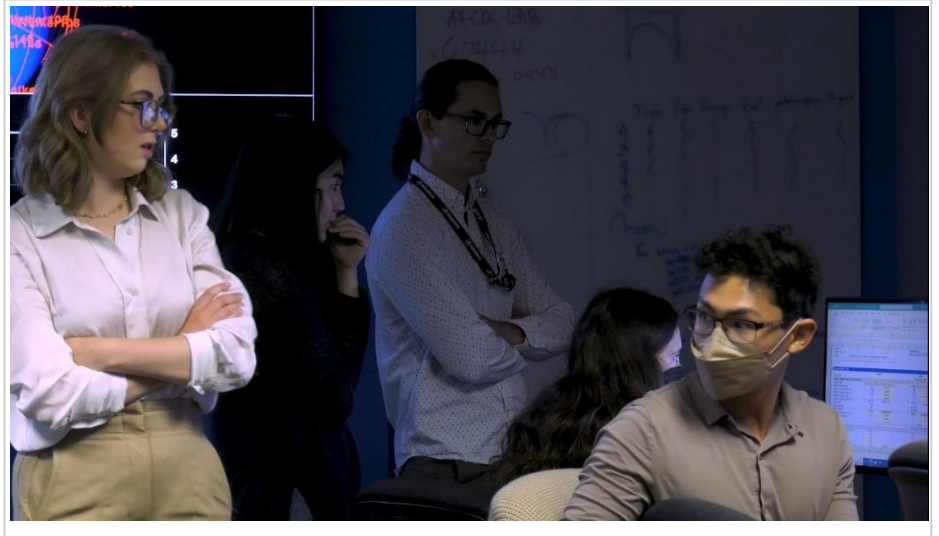
Technologies that promote better cooperation between satellites and enhancements in guidance, navigation, and control systems are especially needed — for formation flying, and inspection or servicing type missions. We also need to look at technology developments in cyber security to protect our space systems, and to develop means for minimizing space debris. Finally, understanding how the overall system can benefit from small satellite standards and determining the best approach for standards implementation will benefit the entire SmallSat community.

*Read the full interview on Aerospace's Medium channel.*



# Aerospace Interns Improve Wildfire Detection and Monitoring Capabilities

August 02, 2022



For 25 years Aerospace’s Concept Design Center (CDC) has applied cutting-edge digital engineering tools and approaches to provide relevant information and guidance in customers’ decision-making processes.

Like previous summers, the CDC formed teams comprised of promising future engineers. However, unique to this year, the interns contributed to an integrated effort to provide an in-depth analysis on a single customer-funded initiative: Project Wildfire.

“Our Aerospace interns tackle real-world problems using the Concept Design Center,” said Dr. Rob Stevens, Director of Aerospace’s Model-Based Systems Engineering Office. “This summer, more than 30 interns across Aerospace’s Engineering and Technology Group (ETG) and customer-facing program offices came together and worked in a highly collaborative environment to develop and evaluate architecture options and system design solutions to improve wildfire detection, monitoring and response.”

## Three Teams, One Goal

As wildfires grow in frequency due to climate change, the ability to detect and monitor this type of natural disaster is becoming more crucial than ever. Although some satellites can track these environmental events, there is no singular spacecraft that can provide such information in a consistent and high-resolution manner. To address this gap, the CDC formed three intern teams: a System Architecture Team (SAT) and two Space Segment Teams (SST).

“We’re hoping to design a satellite constellation that can perform wildfire detection and monitoring to help alert people on the ground where wildfires are starting and how they are developing,” said Patrick Follis, graduate overall project co-lead and space engineering graduate student at Delft University of Technology. “[By improving] current capabilities, [such as] better revisit times, we can get more updated information at a quicker pace. Since wildfires can move very quickly, we’re trying to

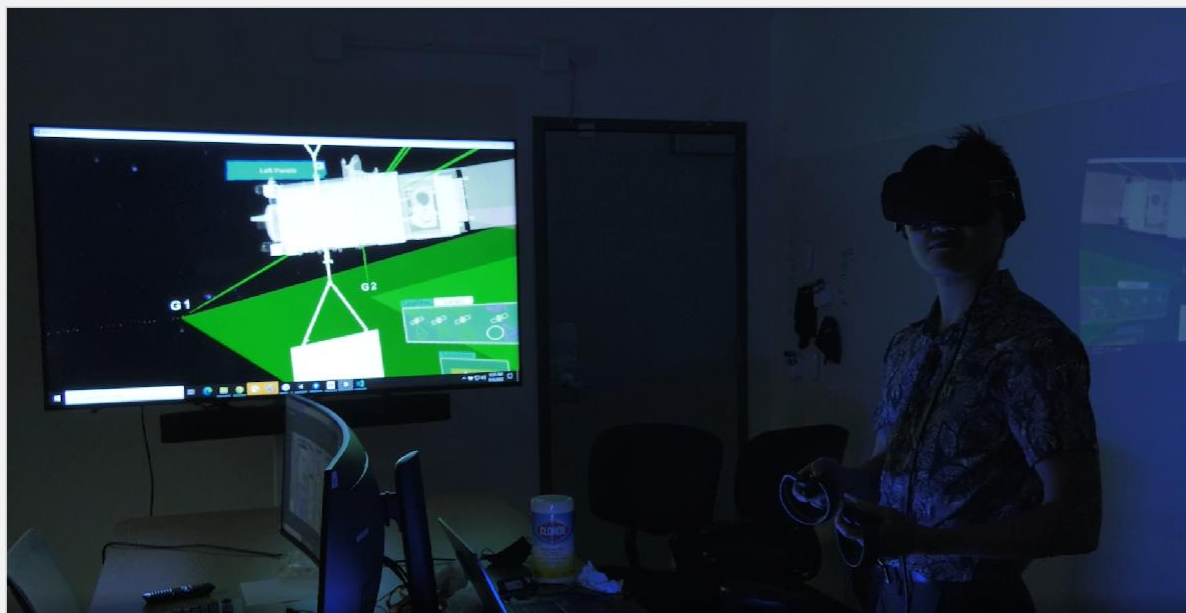
mitigate damage to property and loss of life.”

Coming from various academic institutions and fields of study, these 34 individuals brought different perspectives and skillsets to Project Wildfire. And while the CDC internship program enabled individuals to refine their strengths, it also presented opportunities to experience new areas outside their typical wheelhouse.

“[The System Architecture Team] is more focused on the high-level requirements — defining and figuring out the different architecture configurations that we’re going to go with for our satellite,” said Kylie Phelps, SAT undergraduate lead and aerospace engineering student at Georgia Institute of Technology.

Through investigating a relevant, real-life need among Aerospace’s customers, the cohort gained invaluable hands-on professional experience while simultaneously developing new and improving existing CDC capabilities. For example, this year the teams incorporated augmented and virtual reality (AR/VR) technology into their analysis and problem-solving approaches.

“People who are doing the engineering will be able to throw on the goggles or look at a simulation that’s going on and be able to glean what are some things that we’re missing,” said Sean Sewell, member of the Model Based System Engineering, Digital Engineering, and SST Propulsion teams and mechanical engineering student at Stanford University. “I think it’s kind of a test to see if we can really use AR/VR tools to be beneficial in the engineering process.”



*This year, the teams utilized augmented and virtual reality (AR/VR) technology to help analyze their projects and identify gaps or areas of needed improvement.*

## A Meaningful Impact for All

Providing a collaborative environment has been a core element of the internship experience. Over the duration of the summer, students have received mentorship from Aerospace subject matter experts (SMEs) as well as support from each other.

The workspace has also contributed to a sense of community and teamwork. During the week of July 25, two of the teams performed studies in the CDC lab located on the El Segundo campus. Over the course of the three-day study, the multi-disciplinary teams tested their designs. Because the lab is set up to share data and information in real time, teammates were able to work and execute their projects in a fluent manner.

As the internship experience comes to an end, the teams will present an outbriefing of their results to the internal project customers on Aug. 4. The cohort will also submit a study report that will eventually turn into an Aerospace Tech Memo (ATM). With the conclusion of summer, the group has undertaken and completed impactful work that has advanced digital engineering capabilities and will influence space-based environmental monitoring initiatives.

“If we come up with something that’s competitive, improves on current capabilities and is low cost relatively speaking, this could definitely get some interest in people that are trying to solve this problem whether it’s governmental or private companies,” said Follis.

This year marks the seventh year of a summer intern CDC study coordinated by the Architecture and Design Subdivision in ETG. Dr. Rob Stevens, Akshay Bakane, Harrison Wight, Nishant Prasad, AbdAl R. Chamas and Rina Onishi led in coordinating this year’s CDC program, along with the support of many others across the corporation.



*The cohort will present an outbriefing of their results to the internal project customers during the first week of August.*



# August 2022 Obituaries

August 01, 2022

*Sincere sympathy is extended to the families of:*

- ♦ **Toshi Asato**, office of technical support, hired June 4, 1979, retired Oct. 1, 1996, died March 20, 2022
- ♦ **Ford Cox**, office of technical support, hired Jan. 22, 1962, retired July 1, 1986, died July 17, 2022
- ♦ **Edward Cross**, member of technical staff, hired Dec. 19, 1960, retired Feb. 1, 1994, died May 25, 2022
- ♦ **Harold Croys**, member of technical staff, hired Feb. 25, 1980, retired May 1, 2004, died May 23, 2022
- ♦ **Lawrence Davies**, member of technical staff, hired July 29, 1964, retired Nov. 1, 1993, died June 20, 2022
- ♦ **Rosie Freeman**, office of technical support, hired Nov. 17, 1969, retired Jan. 1, 2005, died May 10, 2022
- ♦ **Gustavo Garcia**, member of technical staff, hired Jan. 3, 1979, retired Sept. 1, 1995, died June 10, 2022
- ♦ **Owen Gibb**, member of technical staff, hired May 21, 1965, retired Sept. 1, 1987, died June 15, 2022
- ♦ **Gordon Goldberg**, member of technical staff, hired Oct. 6, 1981, retired Oct. 1, 1996, died March 8, 2022
- ♦ **Robert Hirtensteiner**, member of technical staff, hired Dec. 26, 1961, retired Aug. 1, 1997, died March 15, 2022
- ♦ **James Johnson**, member of technical staff, hired Nov. 4, 1969, retired July 1, 1994, died July 1, 2022
- ♦ **Martin Peters**, member of technical staff, hired April 11, 1987, retired Oct. 1, 1992, died May 25, 2022
- ♦ **Dorothy Richmond**, office of technical support, hired Aug. 14, 1972, retired March 1, 2003, died June 18, 2022
- ♦ **Eldon Riehm**, member of technical staff, hired Aug. 17, 1970, retired Feb. 1, 1995, died May 31, 2022
- ♦ **Annette Shanks**, member of technical staff, hired Jan. 12, 1978, retired Nov. 1, 1991, died May 2, 2022
- ♦ **Wendy Svitil**, member of technical staff, hired March 5, 1979, retired Aug. 1, 2014, died June 4, 2022
- ♦ **Lawrence Vogel**, member of technical staff, hired March 24, 1980, retired Feb. 1, 2003, died June 7, 2022

*To notify Aerospace of a death and have it included in the Orbiter, please contact People Operations at (310) 336-5107.*

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