

How They Spent Their Summer Vacation

by **Gabriel A Spera**

February 05, 2018

The annual “Take Your Kids to Work Day” is a popular way to introduce kids to the engineering environment at Aerospace. One enterprising engineer recently turned that paradigm on its head, implementing sort of a “take your work to kid” day.

Nahum Melamed of the Guidance and Control Subdivision was looking for a productive way to engage the talents of his son, Avishai, who had graduated high school but had not yet started college at UC San Diego, where he planned to study political science. Nahum suggested that they collaborate on a technical paper for the next planetary defense conference. That may not sound like the sort of thing that would interest a recent high-school grad, but the topic was undeniably cool: Nahum is something of an expert on assessing and countering the risk that an errant asteroid or near Earth object (NEO) might crash into the planet. It is, quite literally, the stuff of Hollywood movies.

“Since my son’s enthusiasm is in the history and dynamics of societies,” said Nahum, “I decided to combine our areas of interest and work together on a topic that aims to make his future and that of his generation safer.” Despite having little background in the subject, Avishai accepted the challenge, intrigued by the prospect of learning something new and gaining practical experience in academic writing—all while helping out his dad in the process.

The project started with a literature survey and proceeded in small steps, Nahum said. “I extracted relevant and elucidating information, and handed it over to him to read, evaluate, and include in the text. I pointed him toward independent sources to identify and extract good information, and he would then iterate on small written segments until they expressed the intended concept clearly. We talked about the issues in the evenings and at the dinner table, and he mapped the insights into written paragraphs over the next day or two.” It was particularly gratifying, said Nahum, to watch as Avishai became further engaged and evolved to contribute more of his own original thoughts and insights into the manuscript. “The most enjoyable thing,” he said, “was having intellectual conversations, and seeing his very first steps as an independent and creative thinker.” Avishai contributed his unique perspective as a student of international political relations, introducing considerations of Game Theory and historical trends in assessing the prospects of global cooperation on NEO defense.

For his part, Avishai began to see the virtue of a truly interdisciplinary approach to problem-solving. “Combining my expertise with my dad’s technical skills and background in both aerospace engineering and planetary defense allowed us to write a better paper than either of us could produce individually,” he said. Nahum agreed, adding, “It was great fun working with him and learning from him how to think about the issues not just from a technical viewpoint but from a much broader perspective.”

The project was a revelation in many regards, said Avishai. “Taking part in planetary defense considerations really opened my eyes to the importance of our work,” he said. “The sheer capacity for widespread damage resulting from near-Earth objects demonstrates a clear need for investment in countermeasures.” It also gave him a deeper appreciation for the aerospace field in general and in his father’s work in particular. “As my first personal involvement in my dad’s work, I was struck by the scale of an aerospace engineer’s purview. Few professions can claim that their work is at the forefront of scientific advancement for our species, or that their efforts seek to secure the safety of the entire planet. Truly, the sky’s no limit for an aerospace engineer!”



Nahum Melamed, right, and his son, Avishai, wrote and delivered a conference paper on planetary defense against asteroid strikes. (Photo: Shavit Melamed)

Nahum and Avishai presented their paper at the [Planetary Defense Conference](#) in Japan last May (by that time, Avishai had nearly completed his freshman year). A modified version was also published by the [Center for Space Policy and Strategy](#). According to Nahum, the conference was an integral part of the overall experience, giving Avishai a chance to see “how an international conference is run, and the breadth and importance of material presented in it—and also to interact with other students and experts and appreciate the wide range of areas involving NEOs.”

Nahum maintains an active conference presentation schedule, spreading the word on planetary defense issues. Tomorrow, Feb. 6, he and Andre Brochier will be speakers at a tutorial session entitled “Planetary Defense, Far and Near” at the American Astronomical Society Guidance and Control Conference in Breckenridge, Colo.

Nahum also is gearing up for the International Space Development Conference, which will take place in Los Angeles in May; he plans to give a presentation based on an asteroid class he developed for the Aerospace University. He also expects to participate in the 2019 Planetary Defense Conference (PDC), which will take place on the East Coast. “I’ve talked with my son about writing another paper together for the next PDC, and hope to begin efforts in the near future,” he said. In the meantime, Avishai is back at college. Ultimately, he hopes to earn a doctorate and pursue an academic career, but still maintains an interest in pursuing research into planetary defense.

“It’s been a privilege to cooperate on such important work,” Avishai said, “and I look forward to another opportunity to contribute my evolving knowledge base to planetary defense—which is a shared passion for both of us.” Nahum agreed, adding, “Also, it was a good father-and-son bonding and confidence-building experience.”

Aerospace Investigates Building Blocks in Space

by **Laura Johnson**

February 12, 2018

Imagine a swarm of small satellite units that can form structures in space and reconfigure themselves for new tasks.

A broad team of technical experts at The Aerospace Corporation is investigating this idea, called Hive, and determining if it’s technically feasible.

“This forward-looking technology could enable all kinds of missions with its adaptability, upgradeability, and large physical size,” said team lead Dr. Henry Helvajian.

The building block of Hive is a smart, mass-producible, small satellite unit that could interlock with other units and pass power, data, and heat. Each unit could rotate a face while attached to other units, as well as detach and climb over other units.

The goal is to make units that are standardized, interchangeable, and able to reconfigure themselves. As Helvajian put it, a Hive unit “rolls, hops, and can be swapped.”

Applications

Hive sparks the imagination and all kinds of interesting possibilities come to mind. One huge advantage of Hive compared to a traditional satellite is that Hive could change its configuration to perform different missions.

For example, Hive could be used as a large, reconfigurable optical telescope. By moving Hive units, the shape of the telescope mirror could change.

This adaptability is especially valuable for long-term missions where requirements and technology may change over time.

“Hive units could go to Mars,” Helvajian said. “In space they serve certain functions, and then on the ground they turn into a building.”

Hive units could also build very large structures in space, structures that are too large to fit on a launch vehicle.



*Hive units could assemble into different configurations in space.
(Illustration: Joseph Hidalgo)*

Space debris is becoming more of an issue, but Hive would not be a sitting target. The Hive units could disperse in the event of a threat, and then reassemble when the threat had passed. Repairs and upgrades would also be easier because malfunctioning or older Hive cells could be individually replaced.

Feasibility

The idea is great, but the obvious question is how realistic this concept is. At this point, Hive is an idea, not a reality, but Helvajian emphasizes that there is a solid engineering backbone.

"I didn't want this to be an exercise in viewchart engineering," Helvajian said. "What stands behind this are 30 subject matter experts, and the feasibility study stands on reasonable engineering foundations."

Indeed, Helvajian has assembled a broad team of technical specialists in areas such as distributed software, timing and networks, thermal, attitude control, mechanisms, and more to investigate the viability of Hive.

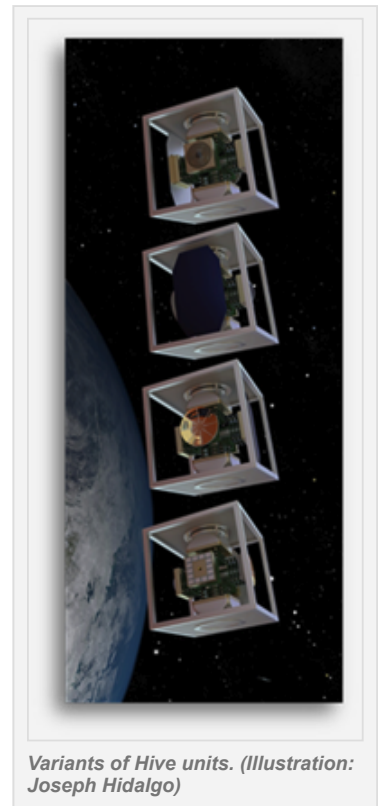
They are considering new approaches to deployable structures, looking at mechanical and thermal interfaces that enable dynamic configurability, and just generally hammering away at the multitude of engineering challenges that inevitably come up with an idea like this.

The team is definitely thinking outside the box ... and also outside the cube. Instead of making the Hive units out of CubeSats, they have considered making the Hive units a circular shape with nested rings, which might provide some advantages.

"In trying to figure out the best form factor to allow us to efficiently package and assemble the Hive units, we drew inspiration from a variety of sources, including the slinky, origami, molecular chemistry, and IKEA," Helvajian said.

This team of creative engineers is continuing to investigate and consider different options, and they are excited to consider what could be possible.

"Hive is just a forerunner to the changes anticipated as space architecture evolves," Helvajian said. "What could YOU do with an assembly of 10,000 programmable units in space?"



Variants of Hive units. (Illustration: Joseph Hidalgo)

EPIC Week Showcases Innovation at Aerospace

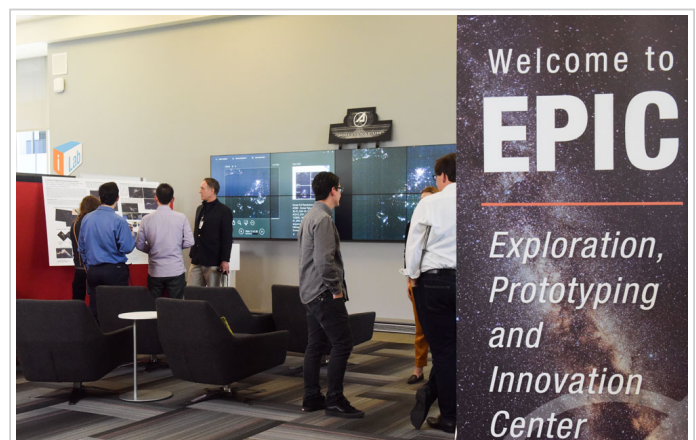
by Gail Kellner

February 15, 2018

Aerospace celebrated breakthrough technologies and innovation during Exploration, Prototyping, and Innovation Center (EPIC) Week with four informative days of speaker events, panel discussions, and poster sessions in El Segundo and Chantilly.

The eventful week opened with Challenge Day where employees were invited to learn about the Aerospace RoboCup challenge and how the corporation performed at the 2017 DARPA Hackfest. Employees were also given the opportunity to submit their ideas to solve The Great Data Caper, an effort to develop an engineering data management strategy that aspires to improve the corporation's ability to discover and share data among staff.

A Launch U panel discussion showcased how Aerospace is leading the discussion with industry, academia, and the government about setting a standard Launch Unit for satellites between the size of a toaster and a small refrigerator. Panelists included Carrie O'Quinn, Aerospace lead, and Justin Carnahan from Tyvak, and Chris Loghry from Moog.



EPIC Week included poster sessions on both coasts showcasing innovative projects at Aerospace. (Photo: Elisa Haber)



The final event of EPIC Week was a presentation by Virgin Hyperloop One Senior Vice President Dr. Anita Sengupta. (Photo: Elisa Haber)

Other events during the week included a panel discussion and mixer session on the future of technology hosted by Randy Villahermosa and Kara Cunzeman; a discussion on microgravity research on the space station by Miki Sode of CASIS, and poster sessions on both coasts on Hubs, SeedTECH, ATIP, and posters recently presented to the board of trustees.

The culminating event of EPIC Week was a presentation from Virgin Hyperloop One executive Dr. Anita Sengupta, senior vice president of systems engineering. She was introduced by Aerospace President and CEO Steve Isakowitz.

The start-up Hyperloop One company is building high-speed transportation systems using low-pressure tubes and electric propulsion, what Sengupta called "space travel on the ground." She said the Hyperloop system will reduce congestion, as well as offer efficient land use, sustainable operations, and structural stability. Sengupta pointed out that the company is not selling transportation, but instead they are selling time and enabling a ten times faster commute. Their ultimate goal is to connect 80 percent of the United States population in five hours or less.

What's All the Hubbub?

February 28, 2018

The space enterprise is changing, our customers are facing change, and Aerospace must be prepared to support them.

"One of the ways we are positioning ourselves to better hear the needs of the customers is through the Engineering, Science, and Technology (ES&T) Hubs," said Steve Isakowitz, Aerospace president and CEO. "The Hubs will help us better align our technical expertise and priorities with the needs of our customers, and everyone at the company has the opportunity to be engaged."

Perhaps you've been hearing about the Hub concept and you're wondering what it's all about. Maybe you'd like to join a Hub but aren't sure how to do that. Read on to learn all about the ES&T Hubs.

What are Hubs?

- Networks of experts across organizational boundaries sharing knowledge
- An inclusive forum for an engaged workforce to align, implement and monitor strategy
- A portal for sharing knowledge and centers for program offices to find solutions and teams
- Recognizable to customers as key strategic areas of interest
- Made of multidisciplinary, multi-divisional, multi-customer technical areas to create synergies
- Persistent, core technical areas where our science, technology and engineering can be linked to customer needs

Hubs are NOT:

- Funding agencies
- An attempt at a re-org
- Unclassified only
- About the Labs or ETG only

What do Hubs do?

Hubs develop the corporate technical strategy, provide technical leadership, and strengthen the enterprise technical backplane.



Why did Aerospace create the Hubs?

This is a new, corporate-wide approach to a technical strategy. As the space enterprise is changing, our customers are facing change and Aerospace must be ready to support them. We need a broadly inclusive process that crosses over all customer needs and gets input from program staff and other subject matter experts.

Is there a hidden agenda?

Yes, by strengthening the technical backplane we also would like to generate more shared knowledge across the enterprise and support program offices in finding the right technical talent for a project.

Who is in charge of the Hubs?

The Hubs are a corporate-wide initiative, involving all organizations. Dr. Sherrie Zacharius is the executive sponsor. Overall Hub coordination will be handled by Dr. Jenny Gautier. Each individual Hub also has a leader.

What does a Hub leader do?

A Hub leader coordinates Hub activities and facilitates the input from the Hub members on the corporate technical strategy. Hub leaders do not drive or decide the technical content for the strategy. The initial Hub leaders have been selected, and these positions will rotate on a regular schedule.

What are the 10 Hubs and who are the leaders?

[Advanced Sensing Technologies](#) – Kenneth Brodeur
[Space Access & Propulsion](#) – Shannon McCall
[Space Enterprise Architecture](#) – Dean Bucher
[Advanced Communications Technologies](#) – Kyle Logue
[Physics of Failure](#) – Zach Lingley
[Intelligent Systems & Data Science](#) – Thomas Kashangaki
[Position Navigation & Timing](#) – Bernie Yoo
[Small Satellites](#) – Catherine Venturini
[Design & Manufacturing](#) – Glenn Bean
[Security & Operations Technologies](#) – Kara Cunzeman

How were these Hubs selected?

Topics were generated after identifying high-level customer needs and ongoing Aerospace activities. Executive and senior leadership then reviewed the Hub topic candidates and decided on ten Hubs that best satisfy criteria of multidisciplinary, multi-divisional, persistent core technical areas.

How will this be funded?

The formation of the network of the Hubs, the development of the Corporate Technical Strategy, and select Hub events are funded through the Corporate Strategic Initiative Project.

Isn't this the same as a Community of Interest (COI)?

No, the COIs are similar in that they are also broadly inclusive; however, Hubs are persistent networks representing top-down selected multidisciplinary, persistent networks that are corporately funded to deliver a product unlike COIs.

How do the Hubs relate to iLab?

The Hubs inform the corporate technical strategy, and iLab directs investments based on that strategy.

How will this affect the Aerospace Technical Investment Program (ATIP)?

The Hubs will develop the strategy that will drive all investment decisions, including ATIP RFP topics, iLab Venture topics, and Strategic Technical Areas. Hub members will also populate ATIP Review Panels for the double-score process.

How do I get involved?

All Aerospace employees can join the Hubs! There are many ways to get involved:

Start by visiting the [Hub Portal](#) (the central spot for all things Hub-related).

www.aerospace.org



Each Hub also has an Exchange ([linked above](#)) where you can learn more, connect with other members, and participate in discussions.

Attend one of the Hub events to see what it's all about.

Contact the Hub leads to learn more about upcoming activities and how to engage.

Watch for upcoming events announced on Inside Aerospace and AeroNewsline.

What if the Hub content is classified?

We will mirror the Hub structure on ASENNet and provide opportunities for classified discussions.

What activities will I do if I join a Hub?

If you join a Hub, you can expect to participate in Hub meetings, focus groups, surveys, online forums, and more.

Why would I want to join a Hub?

Joining a Hub will give you a voice in the corporate technical strategy and a way to help shape the future. It's also a good way to exchange technical information with colleagues, find expertise for your projects, or facilitate the selection of your expertise for new projects.

Which Hub is right for me?

Each Hub covers a broad and inclusive range of technical areas that may not be readily interpreted from the Hub name alone. Visit the [Hub Portal](#) to find out more about the technical areas of concentration within each Hub. Join as many Hubs as you like. There is at least one Hub of interest for each employee!

What if I have more questions?

Head over to the [Hub Portal](#) or contact hubs@aero.org.

Press Release: Aerospace's CSPS Introduces New Senior Advisory Council

February 26, 2018

EL SEGUNDO, Calif. (Feb. 26, 2018) – [The Aerospace Corporation \(Aerospace\)](#) announced today the creation of a new [Senior Advisory Council](#) for its Center for Space Policy and Strategy. These seven distinguished members will bring their deep insight and experience from across the space enterprise to Aerospace.

"The addition of the council further strengthens the center as a critical resource to our customers and the entire space community," said Steve Isakowitz, Aerospace president and CEO. "We're excited about the support and guidance it will provide as part of our vital efforts to shape the future of the space enterprise."

The council works as strategic advisers to the center's research agenda and reviews individual projects. The current members are:

Vice Adm. Manson Brown, USCG (Ret.)

Carissa Bryce Christensen

The Honorable Madelyn Creedon

Adm. Cecil Haney, USN (Ret.)

Lt. Gen. Larry James, USAF (Ret.)

Maj. Gen. Susan Mashiko, USAF (Ret.)

Col. Pamela Melroy, USAF (Ret.)

"We're honored to have these luminaries supporting CSPS, who were each handpicked to offer us insights across the spectrum of space activity," said Jamie Morin, the executive director of the Center.

As part of their first meeting, the Council was briefed on two newly released CSPS policy papers. The first paper, [On-Orbit Assembly of Space Assets: A Path to Affordable and Adaptable Space Infrastructure](#), surveys the new on-orbit assembly paradigm and provides a roadmap toward reconfigurable space fleets. Authors Danielle Piskorz and Karen L. Jones discuss how the ability to build and reconfigure spacecraft on-orbit could overcome key limits imposed by building spacecraft on the ground and then launching them to orbit.

"We found that one important enabling step could be for the industry to establish and adopt standards for common interfaces, particularly in the areas of mechanical, electrical, power, thermal, and data subsystems," said Jones. Piskorz added, "The best time to develop or adopt such standards is before key participants become too heavily invested in their own proprietary technology, because common standards lower barriers to entry and can encourage innovation."

The second paper, [Assurance through Insurance and On-orbit Servicing](#), examines the interplay between on-orbit servicing and the satellite insurance market. Author Rebecca Reesman, analyzes how repairing and upgrading components via on-orbit servicing could potentially revolutionize how satellites operate in space.

"On-orbit servicing could extend service life for aging satellites and could change the way the industry views risk and develops mission plans," said Reesman. "For example, the technology could have big implications for the satellite insurance market. The insurance underwriting process depends on various factors, including the operating environment, new technologies, and business plans."

About the Center for Space Policy and Strategy

The Center for Space Policy and Strategy is dedicated to shaping the future by providing nonpartisan research and strategic analysis to decision makers. The Center is part of The Aerospace Corporation, a nonprofit that provides objective advice to the government on complex space enterprise and systems engineering problems. To read other publications exploring the technology, policy, and economic aspects of current developments in space, visit www.aerospace.org/policy.

The Great Data Caper

February 08, 2018

How do you find the information you need? Aerospace has extensive data and analysis collections gathered over the history of the corporation, yet sometimes we struggle to find timely answers to questions from our customers, share information across the corporation and integrate complementary efforts.

The Agile Mission Assurance (AMA) team is partnering with iLab and EIS to host The Great Data Caper, an effort to develop an engineering data management strategy that will improve our ability to discover and share data among staff and applications, turning data into information and ultimately knowledge.

The first event was held Jan. 29 and participants shared their [user stories](#), or requirements, in the form of "In <some role>, I need to <do something> to <achieve some goal>."

These requirements will be used to inform an internal request for proposals, which will be released shortly.

In March, there will be a challenge event where employees will pitch their ideas, and several will be selected to receive funding.



Announcing the Acronym Contest Winner

February 26, 2018

Thanks to everyone who submitted entries in the Aerospace Acronym Contest (AAC). The Orbiter Editorial Team (OET) was impressed that many contestants submitted acronyms for all of the imperatives, which was neither expected nor required. However, it did add to the heft of those entries.

The OET was drawn to some of the elegant single-imperative entries (SIEs) such as Elvira Wolk's for VELOCITY: Valuable Employees Learning Often Can Improve Team Yield. And the SIE from Scott Suhr for FUTURE: Fly Useful Technology Under Realistic Expectations.

But, after considerable deliberation the OET decided to name Deborah Cannon winner of the AAC (WOTAAC). It was a close call, because Deborah not only submitted an acronym for all the imperatives, but also threw in a poem on GROWTH. The OET was divided over whether the poem should be considered in favor of Deborah's entry because it showed enthusiastic initiative or should disqualify her from becoming the WOTAAC because it didn't follow the rules. Additionally, the OET doesn't know much, if anything, about poetry, and didn't want to give credit for a bad poem.



Therefore, the OET turned to the Orbiter Poetry Consultant (OPC), who has bonafide poetry credentials including a prize-winning book of poems selected for the National Poetry Series and a poetry fellowship from the National Endowment for the Arts (NEA). The OPC commented that Deborah's poem "has a rollicking meter to it," and noted that it was in a form based on popular ballads.

With the OPC semi-endorsement in hand, the OET was confident enough to choose Deborah as the WOTAAC. Her TBD small prize (TBDSP) will be a modest Starbucks gift card sufficient to purchase two grande Caramel Macchiatos. In addition, Deborah, along with everyone who submitted an entry before the noon PT Friday, Feb. 23 deadline will receive a nice participation prize (NPP), consisting of a set of earbud headphones in a handy Aerospace-branded carrying case with a carabiner clip lid for attaching to luggage or to use as a keychain. The NPPs will be sent to all entrants via Aerospace inter-office mail.

Mayo Receives 2018 Herndon Black Image Award

by **Eric Cheevers**
February 07, 2018

Dr. David Mayo, senior project engineer, Advanced Research and Engineering, received the 2018 Robert H. Herndon Black Image Award on Monday, Feb. 5.

As part of The Aerospace Corporation's recognition of African American History Month, the annual award ceremony was held in A1 Titan IVA and was hosted by Sherreth Vaughan and Rosalind Harden, Aerospace Black Caucus president and vice president, respectively. After leading the audience in the Pledge of Allegiance, Vaughan yielded the stage to Mayo's wife, Dr. Talitha Hampton-Mayo, who led the audience in a rendition of "Lift Every Voice and Sing" while accompanied by her husband on the trumpet.

Denise Betts, one of last year's Herndon Award recipients, provided background on Herndon's life and accomplishments, and the significance of his legacy. Award nominator Zigmond Leszczynski, systems director at Goddard Space Flight Center, detailed Mayo's personal and professional history before presenting him with the award. In his acceptance remarks, Mayo credited his ambitions and successes to the ceaseless support of his parents (also in attendance at the event) and his wife.

Malissia Clinton, Aerospace senior vice president, general counsel and secretary, provided concluding remarks and closed the event.

Mayo joined The Aerospace Corporation in 2015 as a technical staff member of the Space Architecture Department within the Systems Engineering Division. At that time, he worked with multi-disciplinary technical systems engineering teams, identifying top-level requirements for developing pre-acquisition architectures and assessing technical risks for the National Security Group as well



Award recipient Dr. David Mayo plays trumpet as his wife, Dr. Talitha Hampton-Mayo, leads the audience in singing "Lift Every Voice and Sing." (Photo: Elisa Haber)



Award recipient Dr. David Mayo is flanked by his nominator Zigmund Leszczynski, left, and Malissia Clinton, Aerospace senior vice president, general counsel, and secretary. (Photo: Elisa Haber)

as civil and commercial interests. In 2017, he was awarded the NASA Earth Science Technology Office (ESTO) alumni trophy and NASA pin for his program management and integration support in an embedded role to ESTO during a transition period within NASA's Earth Science Technology Office. He currently supports ESTO at NASA Goddard Space Flight Center.

Mayo holds a bachelor's degree in mechanical engineering from the Virginia Military Institute, a master's degree in aerospace engineering from the University of Alabama in Huntsville, and a doctorate in aerospace engineering from the University of Maryland College Park. Prior to joining Aerospace, he conducted graduate and post-doctoral research at the University of Maryland in the Department of Aerospace Engineering where he was responsible for the design, execution, and analysis of wind tunnel operations, flow visualization, and particle imaging velocimetry experiments, in addition to numerical simulations of the effects of unsteady aerodynamic flow fields upon micro air vehicles. Mayo also spent six years in the U.S. Marine Corps, and served with a

combat engineer battalion during two Operation Iraqi Freedom combat tours.

The Robert H. Herndon Black Image Award was created in 1982 to honor the memory of Robert H. Herndon, an extraordinary Aerospace engineer and manager. The award recognizes African American employees who exemplify professional and humanitarian qualities at the individual, corporate, and community levels, while also recognizing individual professional achievements beneficial to The Aerospace Corporation, contributions to the enhancement of the quality of community life at large, and personal development. The Robert H. Herndon Black Image Award is presented during the company's recognition of African American History Month.

The Herndon Award presentation was the first of several African American History Month events that will take place through February. For more information, see the Aerospace Black Caucus website: <https://pages.aero.org/abc/>.

Awards and Recognitions, February 2018

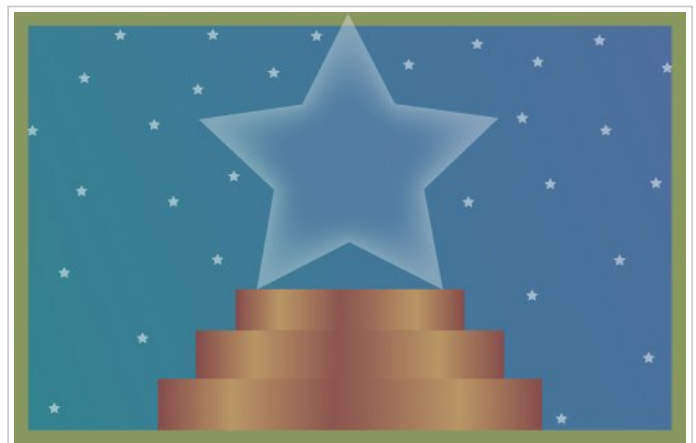
by Gail Kellner
February 22, 2018

Aerospace employees frequently earn recognition for their professional accomplishments. This Orbiter feature acknowledges those honors and awards, including the publication of books. To nominate someone for consideration in this section, send details of the award in a timely fashion to orbiter@aero.org, or contact Gail Kellner at gail.d.kellner@aero.org.

Dr. Dolan Highsmith

Dr. Dolan Highsmith, senior project engineer, Systems Integration and Protection Directorate, Civil Systems Group, was part of the team that received a NASA Group Award for its efforts on the Origins, Spectral Interpretation, Resource Identification, Security and Regolith Explorer (OSIRIS-REx), which is an asteroid sample-return mission.

Additionally, for his contributions to the Early Stage Innovations Proposal Review, NASA's Space Technology Mission Directorate sent Highsmith a letter of appreciation that stated "your commitment and expertise made it possible for us to conduct high quality reviews. Your contributions to the evaluation process are an essential component of creating the pipeline of exciting technologies to support the future of space science and exploration. Our work would not be of the caliber it is without your contributions."



Terry Rector

Terry Rector, senior project engineer for Protected Tactical Systems in the MILSATCOM Division, was recognized as the 2017 Graduate Student of the Year from the Department of Space Studies at the University of North Dakota (UND). Rector was cited for "excellent academic achievement, contribution to positive departmental environment, leadership and service to fellow students, the department, college, university, and community."

He is currently enrolled in the Ph.D. program at UND and is a member of the corporate Educational Fellowship Program.

Dr. Mark McKelvin

Dr. Mark McKelvin, engineering specialist in the Applied Software Technologies Department, Information Systems and Cyber Division, was recently elected vice president of the International Council on Systems Engineering (INCOSE), Los Angeles Section. INCOSE's mission is to advance the state of the art and practice of systems engineering in industry, academia, and government.

February 2018 Obituaries

by **Jessie Ding**

February 01, 2018

Sincere sympathy is extended to the families of:

Raymond Berg, member of technical staff, hired June 12, 1962, retired Sep. 1, 1988, died Jan. 7, 2018
Ara M. Boyajian, member of technical staff, hired Apr. 27, 1981, retired Sep. 1, 1995, died Dec. 17, 2017
Albert Fessler, member of technical staff, hired Apr. 12, 1984, retired May 1, 1989, died Dec. 21, 2017
Merrill Johnson, member of administrative staff, hired Mar. 5, 1979, retired Dec. 1, 1995, died Nov. 23, 2017
Joan P. Kelley, office of technical staff, hired Feb. 13, 1961, retired June 1, 2006, died Dec. 24, 2017
Dean Lindstrom, member of technical staff, hired May 5, 1987, retired Oct. 1, 1992, died Dec. 4, 2017
James Murphy, member of technical staff, hired Sep. 26, 1972, retired Oct. 1, 1996, died Jan. 5, 2018
Lillian M. Parra, member of administrative staff, hired Feb. 24, 1964, retired Dec. 1, 2011, died Nov. 7, 2017
Hannelore S. Porjes, member of technical staff, hired July 24, 1964, retired Dec. 1, 1990, Dec. 19, 2017
Stephen L. Robinson, member of administrative staff, hired Jan. 28, 1961, retired Nov. 1, 1991, died Jan. 10, 2018
Allan B. Schaffer, member of technical staff, hired Sep. 21, 1964, retired Apr. 1, 1994, died Nov. 22, 2017
Katherine Schmidt, office of technical staff, hired Apr. 13, 1964, retired May 1, 1990, died Nov. 17, 2017
Donald Seiveno, member of technical staff, hired May 2, 1966, retired June 1, 1992, died Sep. 14, 2017
Laurine Sowell, office of technical staff, hired Apr. 16, 1979, retired Jan. 1, 2002, died Dec. 23, 2017
Ruth Wilson, office of technical staff, hired Mar. 5, 1979, retired Apr. 1, 1988, died Nov. 7, 2017

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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