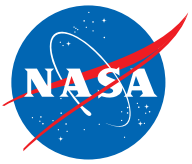


THE INNOVATION CATALYST



HAPPY
NEW YEAR
2023

January 2023

IN THIS ISSUE:

- THE FUTURE OF TECHNOLOGY INNOVATION IS HERE
- IT'S A WONDERFUL NASA LIFE
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- GETTING TO KNOW YOU

TECH TRANSFER TIP

with Technology Manager
Dennis Small:

New Technology Reports (NTRs) are the gateway to technology transfer and licensing of NASA Goddard technologies. Please don't forget to report your new innovations at www.invention.nasa.gov.



INNOVATOR HOUR

TUESDAY, JANUARY 10, 2023

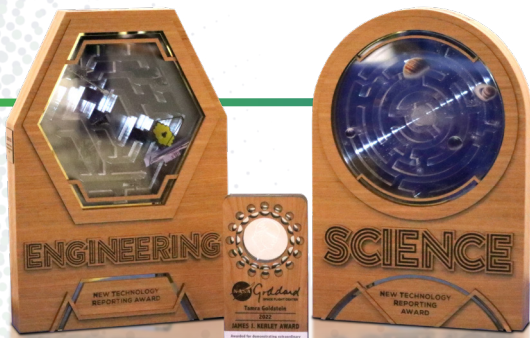
1:00–2:00 P.M.

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STRATEGIC
PARTNERSHIPS OFFICE

The Future of Technology Innovation is here



“Congratulations to all the Goddard patent recipients.”

SPO HOLDS ITS FIRST LIVE I.D.E.A. AWARDS CEREMONY

Sir Arthur C. Clark, science-fiction writer, futurist, inventor, and screenwriter of the 1968 film, *2001: A Space Odyssey* once wrote, “The only way to discover the limits of the possible is to go beyond them into the impossible.” In recognition of NASA Goddard inventors who ventured out of the realm of the possible and into the purview of what seems impossible, the Strategic Partnership Office (SPO) held its first live I.D.E.A. Awards ceremony on December 7th. Last year, due to the pandemic, the event was video recorded on YouTube.

The acronym for I.D.E.A. aptly stands for Innovation, Determination, Entrepreneurship, and Achievement. Each word symbolizes a key step in the process of successful technology development and commercialization at Goddard. The awards ceremony was SPO’s chance to recognize the advancements of Goddard’s inventor community.

Each fiscal year, SPO receives hundreds of new technology reports (NTRs). In FY22, SPO received 188 NTRs, 25 patents, and established four license agreements. In addition, Goddard placed third among all NASA centers in NTR submissions and first among all NASA centers for NTR submissions with at least one civil servant.

“Your commitment to technology disclosures is a critical way to protect your intellectual property while also fueling the process of technology transfer and the future of technological innovation and progress here at Goddard,” said SPO Chief Darryl Mitchell to the guests who gathered at the ceremony. “Without each of you, we could not share Goddard inventions with the private sector, in accordance with the National Aeronautics and Space Act of 1958, which charged NASA with providing the widest practicable and appropriate dissemination of information concerning NASA’s activities.”

Mitchell explained, prior to this year, the ceremony was simply called the New Technology Reporting Program. While the event typically encompassed all of the technology transfer work SPO does, Mitchell said SPO decided it was time to rename the event “because we wanted to reflect what we are celebrating and capture the true breadth of work the Goddard community accomplishes.” Renamed the I.D.E.A Awards, he said, “It will be an annual celebration to recognize not just new technology reporting, but the many entrepreneurial achievements and advances of Goddard’s incredible community of innovators.”



Engineering trophy awarded to Code 550. Photo Credit: N4 Solutions

At the ceremony, SPO honored the 37 FY22 Goddard inventors (see sidebar) by presenting them with their patent plaques. SPO also awarded “traveling trophies” to the Division(s) within the Engineering and Technology Directorate and the Science and Exploration Directorate for submitting the most NTRs over the past year. The Engineering and Technology Directorate’s Instruments Systems and Technology Division (Code 550) finished first by submitting 37 NTRs in FY22. The Sciences and Exploration Directorate had two Divisions tied with each submitting nine NTRs. As such, the Earth Science Division (Code 610) and the Heliophysics Science Division (Code 670) will share the science traveling trophy, each holding it for six months.



Science trophy awarded to both Codes 610 & 670. Photo Credit: N4 Solutions

“It’s an honor to recognize the innovative spirit that flows through Goddard,” said Center Director Dennis Andrucyk to the audience in attendance. “I cannot express enough how proud I am of the work each of you has accomplished this past year in support of the center’s many missions. Your creativity, ingenuity, and dedication has truly been impressive — all while continuing to adapt to the new realities of work and the workplace.”

I.D.E.A. Award Ceremony Patent Plaque Recipients

Inventors submitting their new technology reports (NTRs) to SPO are critical to technology transfer. That is what must happen to ensure breakthrough achievements and commercial success make their way out into the world. Below is the list of individuals and their Goddard Directorate/Division/Office (Code) who were honored with a patent plaque at the I.D.E.A. Awards ceremony for their invention.

Code 400 – Flight Projects Directorate

Sharon Straka

Code 407 – Earth, Science Technology Office

Jacqueline Le Moigne-Stewart

Code 420 – Earth Science Projects Division

Obadiah Kegege

Code 460 – Explorers and Heliophysics Projects Division (EHPD)

Irving Burt

Code 540 – Mechanical Systems Division

Vivek Dwivedi

Code 541 – Materials Engineering Branch

Justin Jones

Antonio Moreno

Code 542 – Mechanical Systems Analysis & Simulation Branch

Daniel McGuinness

Ryan Simmons

Code 546 – Contamination and Coatings Engineering Branch

Mark Hasegawa

Alfred Wong

Code 547 – Advanced Manufacturing Branch

Todd Purser

Code 552 – Cryogenics and Fluids Branch

Matthew Francom

Shouvanik Mustafi

Code 553 – Detector Systems Branch

John Kolasinski

Kevin Denis

Code 554 – Laser & Electronic Optics Branch

Anthony Yu

Kenji Numata

Code 555 – Microwave Instrument Technology Branch

Berhanu Bulcha

Manohar Deshpande

Code 561 – Flight Data Systems and Radiation Effects

Kenneth O’Connor

Code 564 – Instrument Electronics Development Branch

Kyle Gregory

Gerard Quilligan

Code 592 – Systems Engineering Services and Advanced Concepts Branch

Xiaoyi Li

Code 596 – Component Hardware Systems Branch

Munther Hassouneh

Kenneth McCaughey

Samuel Price

Luke Thomas

Luke Winternitz

Code 599 – Mission Systems Engineering Branch

Lloyd Purves

Code 665 – Observational Astrophysics Laboratory

Edward Wollack

Matthew Greenhouse

Karwan Rostem

Code 690 – Solar Systems Exploration Division

Daniel Glavin

Code 691 – Astrochemistry Laboratory

Perry Gerakines

Code 693 – Planetary Systems Lab

Shahid Aslam

Code 699 – Planetary Environments Laboratory

Mahmooda Sultana

“Because of your willingness to participate in tech transfer, space technology has a chance to shine and spur economic development,” added Deputy Director for Technology and Research Investments Christyl Johnson at the ceremony. “You’re also helping Goddard foster and strengthen relationships with our external collaborators across a multitude of industries. And I think we can all agree that these kinds of partnerships benefit all of us.”

Highlighting the event, SPO bestowed the prestigious annual James Kerley Award, which recognizes civil servants who have been instrumental in advancing the mission of technology transfer for the Goddard Space Flight Center. The award is granted to those individuals who go above and beyond basic requirements to facilitate the process of technology transfer. The award is named after James Kerley, a champion of technology transfer at Goddard. His inventive ideas and collaborative mindset helped establish Goddard’s reputation as a center for technology development and innovation.

“The award is our way of remembering the legacy of James Kerley, who was one of Goddard’s most prolific innovators,” stressed Mitchell. “James, affectionately known as Jim, worked at Goddard for more than 30 years and was tenacious when it came to innovation. I had the pleasure of working with Jim before his passing in 1994, and we have honored his memory every year since with this award.”

Mitchell presented the James Kerley Award to Tamra Goldstein, assistant chief of operations in the Software Engineering Division (Code 580). Chair of NASA’s Software of the Year (SOYA) Nomination Committee for many years and volunteer lead facilitator for a Lean Six Sigma activity focusing on improving the software release process at Goddard, Goldstein was presented the award for her “constructive outlook and stellar support,” which had a “profound impact on the success of the technology transfer mission at Goddard.”



From left to right, Kerley family member Catherine Castellon, Tamra Goldstein and Darryl Mitchell. Photo Credit: N4 Solutions

“Tamra Goldstein has been an exemplary advocate for the transfer of Goddard developed software technologies for many years,” said Mitchell in presenting her with the award. “She has of her own initiative, created in-depth resources supporting NASA technology transfer for the Software Engineering Division (SED) in their organizational Wiki. Thanks to Tamra, the Wiki provides a repository of valuable guidance to SED personnel on how to submit new technology reports, navigate the software release process, and general technology transfer program information. I cannot think of anymore more deserving [of the award].”

“Receiving the James Kerley Award is an honor and working with the Strategic Partnerships Office is the most rewarding experience of my NASA career,” said Goldstein, who will be retiring from NASA. “Prior to coming to NASA GSFC, I worked for the U.S. Patent and Trademark Office where I first learned about the importance of fostering innovation and safeguarding intellectual property rights. GSFC is where I learned the true value of commercializing technology innovations – specifically for the advancement of space business as well as for the betterment of everyday life on Earth. I am grateful to have been a part of the work SPO performs, which is so important to NASA and to the world.”

“Congratulations to all the Goddard patent recipients,” said Mitchell at the conclusion of the ceremony. “The Strategic Partnership Office is extremely proud of your accomplishments.”

THE STRATEGIC PARTNERSHIPS (SPO) OFFICE PRESENTS

INNOVATOR HOUR

Have questions about protecting your innovation?

Want to learn more about how to submit New Technology Reports?

Have general questions about technology transfer and partnerships?

Sign up for a one-on-one 20-minute timeslot with a SPO representative.

Meetings will be held virtually via Microsoft Teams.

NEXT SESSION: TUESDAY, JANUARY 10, 2023
1:00-2:00 P.M.

Available Timeslots

1:00-1:20 P.M.

1:20-1:40 P.M.

1:40-2:00 P.M.

How to Sign Up

To register for the upcoming session and secure your timeslot,
[complete the registration form.](#)

It's a Wonderful NASA Life

DAVE WILCOX RETIRES FROM WALLOPS

When Dave Wilcox looks back over his almost 40-year career at Wallops, one of his most memorable events was the launch of the LADEE (Lunar Atmosphere and Dust Environment Explorer) mission on September 6, 2013. Launched from a Minotaur V rocket at Wallops, LADEE's robotic mission was to orbit the Moon to gather detailed information about the lunar atmosphere, conditions near the surface and environmental influences on lunar dust.

As the chief engineer of the Minotaur V launch, Wilcox played a critical role in the success of the LADEE mission. However, it was not the mission itself that made this such a memorable experience.

"My mother was not well at the time, and she passed away two days before we launched," recalled Wilcox. "I was supposed to be on the console at the control center for the launch. Everyone [on the project team] said, 'Don't worry about it, you don't have to support the launch, we understand.' But I could not do that. I knew my mother would want me to do my job and so I did."



The LADEE spacecraft is encapsulated for launch at NASA's Wallops Flight Facility.
Photo Credit: Dave Wilcox



Dave Wilcox at Pearl Harbor while on travel for the Low Density Supersonic Decelerators (LDSD) project. Photo Credit: Dave Wilcox

After 39 years and seven months on the job at Wallops that dedication best sums up Dave Wilcox's career. Describing himself with a "tendency to be a workaholic," he relished almost every NASA project and mission he worked on at Wallops. That starts from his humble beginnings back in 1983 as a young mechanical engineering student learning about Wallops operations while working on the last Scout rocket launch to his transition to designing, building, and launching sounding rockets as an early career engineer to working as chief of the Small Satellite and Special Projects Office (Code 850). After an exhilarating career at Wallops, Wilcox retired from NASA on Dec. 31.

"I know it sounds like a cliché, but I have done everything there is to do at Wallops and worked in nearly every project area," said Wilcox, who graduated from Old Dominion University with a bachelor's degree in mechanical engineering. "I started my career as a young mechanical engineer working in the Sounding Rocket Program. I next worked on space shuttle payloads [as mission manager of the Get Away Special program and later Assistant Chief of the Shuttle Small Payloads Office]. Following the Columbia accident [in 2003], I returned to my roots, as a branch head for the Mechanical Systems Branch. During the 11 years I spent in



This photo was taken during a visit to the Jet Propulsion Laboratory (JPL) for LDSD. The “spare” Rover is in the background. Photo Credit: Dave Wilcox

that job, I supported projects in all areas at Wallops: aircraft projects, balloon program support, range and mission management, and orbital rocket launches. I’ve touched and contributed to all the different areas that Wallops is known for and so, I feel like I have run my course.”

Propelled by his extensive experience at Wallops, Wilcox became chief of the newly created Small Satellite and Special Projects Office in 2017. The office serves as a “bridge” between NASA’s sub-orbital program projects and larger spacecraft missions. These include CubeSat missions, small satellite missions, and unique or complex projects that do not fit within the typical Wallops program tiers, such as sounding rockets, scientific balloons, aircraft mission support, and range and mission management.

“Oftentimes there were projects that didn’t quite fit into any of those flagship programs at Wallops,” explained Wilcox. “Those projects didn’t really have a home organizationally and required processes to implement those missions didn’t exist, so Wallops decided to form this new office. The objective of the office is to try and find that sweet spot between the traditional sub-orbital program work that we do at Wallops and the more complicated missions that you might encounter

at Greenbelt. I’m proud to have been on the ground floor of standing that office up.”

By way of example, Wilcox said the CODEX (Coronal Diagnostic Experiment) project, which his office is currently working on, fits into that category. Developed in collaboration between Goddard and the Korean Astronomy and Space Institute, the goal of CODEX is to develop a solar coronagraph - a telescope designed to block out the direct light from a star - and, using fine pointing technology developed initially for the Balloon Program, build a payload that will be installed on the International Space Station.

During his time at Wallops, Wilcox has worked closely with the Strategic Partnership Office (SPO) and has been a champion of technology transfer and partnerships. Wilcox and his team have collaborated annually with SPO on the Goddard booth and presence at the SmallSat Conference in Logan, Utah.

“Technology transfer and partnerships are extremely important to the work that we do at Wallops, even within the legacy programs like the Sounding Rocket Program,” said Wilcox. “Suborbital programs provide the perfect platform for new

technologies to be tested in a real environment. Our growing SmallSat mission portfolio is another example because they are relatively low-cost opportunities to take recently developed technology and perform a flight demonstration. These programs are the beginnings of infusion into larger science missions. It all begins with our small missions!”

During his career at Wallops, Wilcox has experienced everything from the Northern Lights of the Aurora at the launch of a sounding rocket payload in Alaska to crawling around dressed in a clean room “bunny suit” in the cargo bay of a Shuttle orbiter at the Kennedy Space Center. When Wilcox thinks about his career at Wallops, it is those early days as a young mechanical engineer that he remembers most fondly.

“The most fun that I’ve had in my career at Wallops was designing, building, testing, and launching sounding rockets,” recalled Wilcox, who now plans to spend time with three grandkids, Erin, Ella, and Parker, playing his array of guitars, and outfitting his new garage and workshop. “I am going to miss all the people and relationships [at Goddard] that I have developed over the years. But for me, nothing compares to being a couple of hundred feet from a sounding rocket being launched that you helped design and build.”



This photo was taken during a visit to NSAS’s Jet Propulsion Laboratory for LDSO in the clean room with the Test Vehicle that launched in 2015. Photo Credit: Dave Wilcox

Advice for Young Engineers

After almost 40 years, Dave Wilcox is retiring from Wallops. Here is some advice he has for young engineers at Goddard.

“Do the things you need to do to be the best at what your job is, put the work in,” said Wilcox. “But at the same time, be open to trying new things and new assignments. And, if you have the opportunity to do a detail somewhere, strongly consider doing it because you need to be open to going and trying new things. You can develop tunnel vision and get pigeonholed into one thing that you become ‘known for.’”

“Be open to trying new things and new assignments.”

One of the things that Wilcox thinks Goddard needs more of are good systems engineers. A systems engineer will coordinate different teams, testing, and evaluations of products or systems development. They will often work with a project manager and engineering team and become the communication liaison to link several groups. Systems engineers also work through each phase of a process, from the initial plan to validation and implementation and will focus on performance, testing, scheduling, and budgets.

“The development of a systems engineer is an organic process; you start off as a mechanical, electrical, or some other discipline engineer and you work on enough different tasks and projects and get exposed to different problems and different situations that you just amass all this knowledge,” noted Wilcox. “It takes time and experience. Today our demand for systems folks has outpaced the time it takes to develop them. So be open to branching out to doing other things that are not necessarily in your wheelhouse or technical training and experience. The quicker you can develop that sort of broader knowledge outside of your home discipline area, the better off you will be career wise. And that is what NASA is looking for today.”

Unleashing Innovation

HAPPY ANNIVERSARY BAYH-DOLE ACT



Sen. Birch Bayh, D-Ind., and Sen. Bob Dole, R-Kan., right, are seen together on Feb. 21, 1978, at the U.S. Capitol. Photo Credit: AP Photo/John Duricka

December 12 marked the 42nd anniversary of President Jimmy Carter signing the Bayh-Dole Act into law. This historic piece of legislation, sponsored by Senators' Birch Bayh [D-IN] and Robert Dole [R-KS], was passed in order to allow small businesses, universities, and non-profits the right to retain ownership of their intellectual property (IP) made under contract with the federal government. The act is a key pillar of SPO's effort to facilitate and promote the transfer of Goddard technology to the private sector.

"It is because of the Bayh-Dole Act," said SPO Technology Manager Josh Levine, "that every contractor-developed innovation on campus has to be reported and researched for commercial potential. Bayh-Dole is a cornerstone of what we do at SPO."

In terms of economic impact, the act resulted in a large increase in public-private collaborations and led to countless scientific advances and technologies developed. According to the Bayh-Dole Coalition - the act's official website - since its enactment in 1980, the act has increased U.S. economic output by \$1.9 trillion, supported 6.5 million jobs, and played a role in 15,000 start-up companies.

The Economist newspaper, one of the leading voices in economic issues, has called the Bayh-Dole act "possibly the most inspired piece of legislation to be enacted in America over the past half-century... More than anything, this single policy measure helped to reverse America's precipitous slide into industrial irrelevance."

The act accomplishes several goals including:

- Empowering universities, small businesses, and non-profit institutions to take ownership of inventions made during federally funded research, so they can license these basic inventions for further applied research and development and broader public use.



- Encouraging private-sector investment needed to turn basic government-funded research into tested and approved products, while requiring these products to be manufactured domestically and ensuring royalties for universities to further advance basic research and education.
- Allowing the government to require additional licensing of inventions arising from its research if the invention is not being made available for public use or during public health or other national emergencies.
- Ensuring basic innovations discovered through federal research are developed into real-life products, including approved therapies that reduce suffering, treat the sick, and improve lives.

"Bayh-Dole reflects the American spirit. It shows that innovation thrives when we honor the intellectual property system the Founding Fathers handed down to us," said Bayh at the 30th anniversary of the Act. "It is appropriate that government funds the long-range research which simply cannot be performed by industry. But commercial development must be done by the private sector. This is a very arduous, expensive endeavor. It is best accomplished when those making the inventions are trusted to know best how their discoveries should be managed."

Get Your Crayons and Pencil Sharpener Ready

THE SPO ACTIVITY AND COLORING BOOK IS COMING BACK!

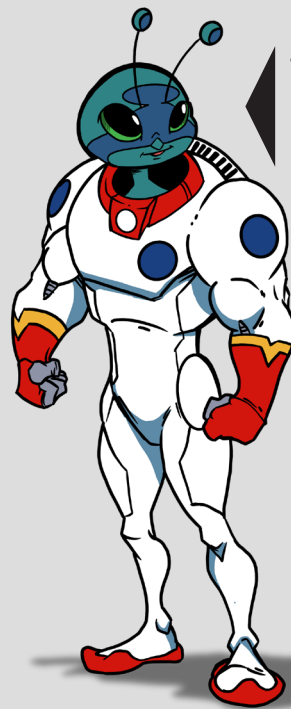
The Strategic Partnerships Office (SPO) is happy to announce the reboot of our popular SPO activity and coloring book. This new iteration will feature many of the activities young readers have come to know and love, such as word searches, crossword puzzles, mazes, and more. This new and exciting publication will replace and update the *To Space and Back! Coloring Book* and *Technology Transfer with Space Pup* activities books.

Designed for young readers, the book explains through fun activities and puzzles, what tools were developed for various NASA applications, and how NASA transfers that technology to the private sector for use in everyday products that make everyone's life better, safer, and easier. The activity and coloring book helps young readers answer the question: What is technology transfer?

In past publications, SPO relied on the help of Space Pup, a Goddard tech transfer mascot, to help show and explain some of these space technologies. With the new activities and coloring book, readers will be guided by a new and interesting cast of characters. Presently, these three characters have no names. That's where you come in.

With the coming launch of the new activities and coloring book in the Spring of 2023, SPO is pleased to announce a Name the Characters Contest where the Goddard community will have a chance to submit the names that you believe best fit these characters. The winning names will be used in the production of the activity book along with the recognition of the person or persons submitting the winning names.

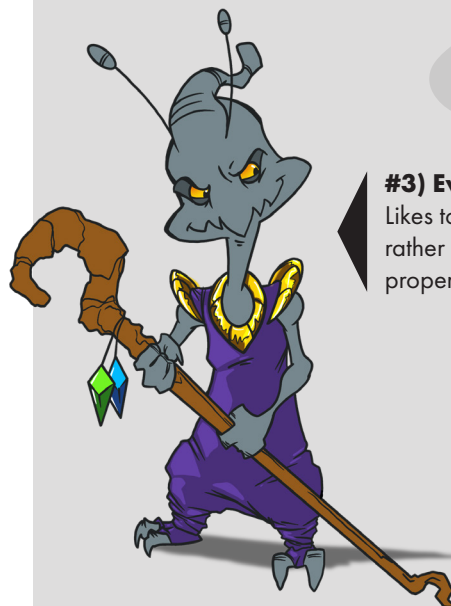
To the right are illustrations and a brief description of each character to help you come up with a name. And by the way, we won't forget about Space Pup, as they may make a cameo or two in the new book.



#1) Hero Alien Character
Powers up by wearing a mechanical suit equipped with NASA technology.



#2) Sidekick Alien Character
Smart and squishy, likes to create and invent things. NTR submission expert.



#3) Evil Alien Character
Likes to plot and steal technology rather than obtain it through the proper channels.

Please send your name submission to brian.a.gabourel@nasa.gov with the subject line, "Naming Contest". Please submit your names by January 27, 2023. Winners will be announced in an upcoming issue of *The Innovation Catalyst*.



Photo Credit: Naval Academy Athletic Association

Out of this World Uniforms

NAVY WEARS NASA ASTRONAUT-THEMED UNIFORM FOR ARMY-NAVY GAME

Every year since 2008, both the Navy Midshipman and Army Black Knights have worn special uniforms for the annual Army-Navy football game. These unique uniforms are designed to honor a particular aspect of their branch, history, or culture.

This year, for the 123rd game played at Lincoln Financial Field in Philadelphia, Pennsylvania on December 10th, the Navy team chose to honor NASA. The Navy uniform was reminiscent of NASA's spacewalk suits, with its distinctive red stripes, NASA "meatball" logo patches, and "worm" font NASA logo. The uniform also features cleats designed to resemble moon boots, with shiny dots to represent stars.

One side of the Navy football helmet shows the NASA logo in front of the Moon. The other side is a hand-painted picture of astronaut Bruce McCandless II, a Navy graduate, as he made the first-ever untethered spacewalk. In 1984, McCandless flew 300 feet away from the Space Shuttle Challenger with nothing to keep him from slipping away from the shuttle except for the Manned Maneuvering Unit and two cans of nitrogen to steer him. The photo of his spacewalk is now one of NASA's iconic signature historical images.

The pants, helmet stripe, and gloves featured the astronaut pin, first given in 1963 to members of the Mercury 7 mission. Astronauts received the silver pin after completing basic training and the gold pin after the completion of a spaceflight. Mercury 7 was NASA's first spaceflight program, to see whether it was possible for humans to stay in space and for how long.



Left side helmet graphic. Photo Credit: Naval Academy Athletic Association

Getting to Know You

MEET THE STAFF IN GODDARD'S STRATEGIC PARTNERSHIPS OFFICE



Josh Levine, Tech Manager

Levine works with a diverse portfolio of Goddard innovations, from technologies that enable on-orbit servicing and manufacturing to instruments that allow study of the solar system. He evaluates NASA technologies for their commercial potential and locates industry partners to aid NASA research.

Bio

Levine began his career in technology as a research engineer at the University of Washington, where he worked in a lab for three years studying how to improve the fit of prosthetic limbs on amputees. His work involved running trials with a thermal camera and taking thermal images of people wearing their prostheses to see if certain activities had any association with the development of pressure sores.

After that experience, he spent 10 years at the U.S. Patent and Trademark Office, specializing in implants, before joining the Strategic Partnerships Office at NASA Goddard, first as a contractor. He converted to a civil servant in 2020 in his current role as technology manager. Levine holds a bachelor's degree in mechanical engineering with a minor in biomedical engineering from the Rose-Hulman Institute of Technology in Terra Haute, Indiana.

What is One Thing About Tech Transfer that Everybody Should Know?

Tech transfer is a way to show the public that NASA's theoretical science has value even outside of pure research. Our research has value to the companies that want it, and we're contributing to the economy as a whole. If you want a concrete justification for basic research, it's through NASA's licensed technologies that provide value for companies around the country.

For questions about technology licensing or other topics, you can contact Josh Levine via email: joshua.h.levine@nasa.gov or by phone: 301-286-6705

Next month, read about another SPO staff member.