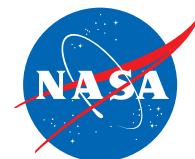


DECEMBER 2023

THE INNOVATION CATALYST

NEWSLETTER

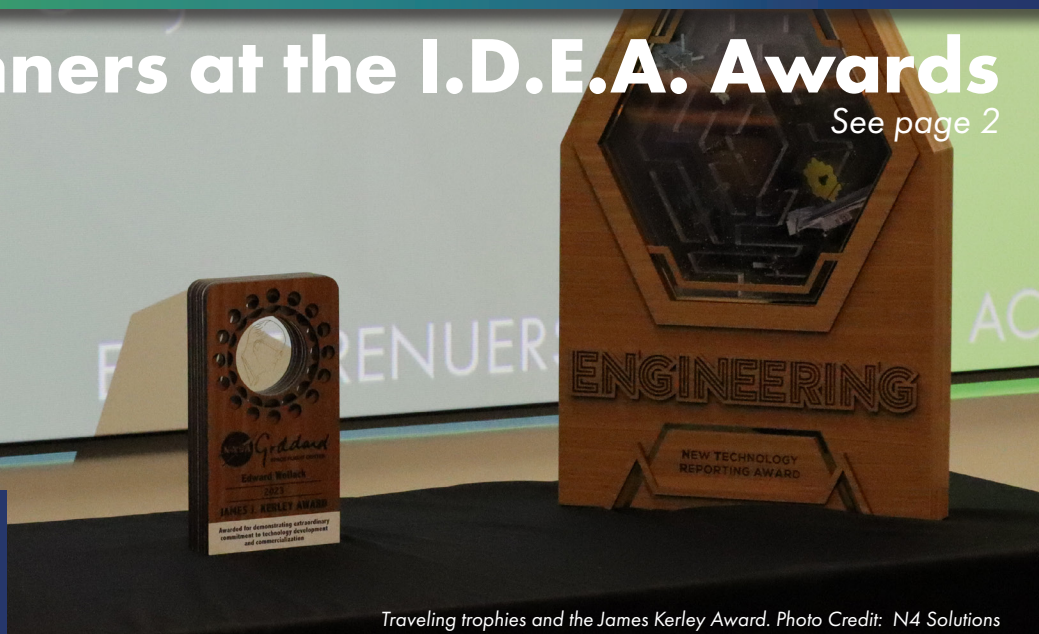


Big Winners at the I.D.E.A. Awards

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EVENTS



This month's Tech Transfer Tip with Senior Technical Writer

Doug Scott

Engineers and scientists at NASA Goddard submit hundreds of NTRs every year. Once patented and licensed, they create a notable portfolio of intellectual property that is available to private industry, academia, and other government agencies for public benefit. There have been countless success stories of Goddard technologies that have been transformed into commercial products and services. The next story can be yours!



Seasons Greetings
AND
HAPPY NEW YEAR

NP-2023-11-191-GSFC

2023

I.D.E.A.

Awards

I.D.E.A. Awards Capture the Imagination of the Goddard Community

Goddard has some of the best and brightest minds in science and engineering. Because of that, the center has a long history of innovation and technology transfer. Alan Kay, an award-winning computer scientist must have been thinking of Goddard when he said, "The best way to predict the future is to create it." In recognition of 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 second I.D.E.A. Awards ceremony on November 8.

Traditionally, this event was called the New Technology Reporting Program. Through much thought and deliberation SPO changed the name to I.D.E.A. last year. 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. This year's awards ceremony, which had 68 attendees, was SPO's chance to recognize the technology transfer achievements and advances of Goddard's incredible community of innovators.

Each year, SPO receives hundreds of New Technology Reports (NTRs) from Goddard engineers and scientists. In FY23, SPO received 167 NTRs, 19 patents from the U.S. Patent and Trademark Office (USPTO), and executed seven license agreements with commercial industry. This placed Goddard among the top three NASA centers in NTR submissions.

"We have a lot to be proud of," said SPO Chief Darryl Mitchell to kick off the ceremony. "These I.D.E.A. awards are an opportunity to take stock of how far we have come in the past year and look ahead with excitement about what is to come. We had a lot of fantastic innovations reported, and through technology transfer, commercialization, and partnerships, we are now starting to take innovation to the next step."

At the ceremony, SPO honored 40 of the FY23 Goddard inventors who received a patent from USPTO by presenting the

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Code 550 accepting the Engineering New Technology Reporting Award trophy and Code 670 accepting the Science New Technology Reporting Award trophy at the 2023 I.D.E.A. Awards. Photo Credit: N4 Solutions

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recipients with a special plaque acknowledging their patent. SPO also recognized Goddard Divisions that demonstrated the most innovation over the past year with a traveling trophy. The Instruments Systems and Technology Division (Code 550) received the Code 500 Engineering New Technology Reporting Award trophy and the Heliophysics Science Division (Code 670) received the Code 600 Science New Technology Reporting Award trophy.

“I want to congratulate all of you because the work that you are doing every day matters so much to the present and the future of Goddard,” Center Director Dr. Makenzie Lystrup told the audience. “I was very pleased to hear about these awards because I think it is very important that we come together and celebrate these moments of appreciation. We have a lot of talented engineers and scientists at Goddard and many of you have spent a huge part of your career developing specific technologies. But an important part of technology development is to get it out of the government and put into the hands of people who can use it more broadly. That is really important because by doing technology transfer, we are investing in the next generation of technologies. I just want to say that I really appreciate how all of you are looking ahead and helping to ‘up our game’ when it comes to tech transfer. We are good at it, but with your help, we can always get better.”

“Because of your innovative spirit combined with your willingness to participate in tech transfer, space technology has a chance to shine and spur economic development,” added Dr. Christyl Johnson, deputy director for technology and research investments. “These steps are not only appreciated but they’re also critical to ensuring that your breakthrough achievements will make the biggest impact in the world and may also go on to achieve commercial success. 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.”

During the event, SPO also bestowed the prestigious James Kerley Award, which recognizes civil servants who have been instrumental in advancing the mission of technology transfer at Goddard. The annual 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.

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"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 Dr. Ed Wollack, a research astrophysicist in Goddard's Observational Cosmology Laboratory (Code 665). This August, Wollack was also named as one of the three 2022-2023 inductees into the NASA Technology Transfer Program's Inventors Hall of Fame. His research spans a broad range of topics that include cosmology, astronomical instrumentation, electromagnetic devices, and materials. By filing his NTRs and working with SPO, Wollack helped to ensure that the technologies developed by and for NASA Goddard are broadly available to the public, maximizing the benefit to Americans.



*Dr. Ed Wollack accepting the James Kerley Award at the 2023 I.D.E.A. Awards.
Photo Credit: N4 Solutions*

"Ed has been instrumental in furthering the Strategic Partnerships Office's mission as well as technology transfer at Goddard," noted Mitchell. "He has developed invaluable resources such as his exemplary support of the technology transfer through the submission of an astonishing and unparalleled 111 NTRs, resulting in 26 U.S. patents. His mentorship and advocacy for technology transfer among new and upcoming innovators within the Goddard community has also been remarkable. And, on top of all this, Ed has not only a willingness, but also a real enthusiasm for supporting technical discussions with those interested in exploring licensing any of his numerous patented technologies. We're delighted to welcome Ed to the honored ranks of James Kerley Award winners."

"James Kerley's legacy is not in the number of patents or NTRs, it is about giving a place for ideas to grow and find their place in the world," said Wollack upon receiving the award. "To be honest, I did not expect to win. I don't do what I do to receive awards, I do what I do because I love learning and interacting with other people. I humbly appreciate receiving this award, but what make it special for me is that James Kerley really put a premium on mentoring and teaching, and I think that is a role that I try to aspire to. In that respect, James Kerley is a role model for me."

When asked if we can expect to see more patents from Wollack in the future, he laughed and said, "Yes, I think I have five to seven more pending. And on my desk and in my computer, I have a bunch of ideas that are in various stages of completion. So, I suspect that you will see more."



Keynote Speaker Tyrome Smith, director of Strategic Partnerships at the Common Mission Project. Photo Credit: N4 Solutions

The event also featured keynote speaker Tyrome Smith, director of Strategic Partnerships at the Common Mission Project. He spoke about how encouraged he was by the willingness of Goddard engineers and scientists – through innovation – to take bold steps to develop breakthrough products and technologies.

"I remember sitting on the floor in front of a very new color TV back in 1973-72, listening to Water Cronkite and David Brinkley talk about the Apollo mission and thinking we are sending people to the Moon! How audacious was

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SPO Chief Darryl Mitchell (left) with Keynote Speaker Tyrome Smith (right) at the 2023 I.D.E.A. Awards. Photo Credit: N4 Solutions

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that idea,” he shared with the audience. “I am encouraged by your audacious ideas, by the audacity of your imagination to try and develop something that nobody else has thought about. So, I encourage you all to shoot for the Moon!”

Also attending the awards ceremony and joining the celebration were several important external partners. They included Amy Duray, program manager with the Maryland Department of Commerce as well as Mayank Kapur, director of business development and Alicia Moran, director of innovation and entrepreneurship with the Prince George’s County Economic Development Corporation.

“The I.D.E.A. awards are an amazing event because we celebrated technology transfer and how an idea comes into reality,” said Dr. Berhanu Bulcha, a research engineer in the Microwave Instruments and Technology Branch (Code 550) who received a patent plaque at last year’s I.D.E.A awards and was in attendance this year. “We just heard today that there are seven technologies that are being licensed and that means it is going to be commercialized and that will make all of our lives a little bit better.”

Remember, Hit that Submit Button!



STRATEGIC
PARTNERSHIPS OFFICE

When submitting a New Technology Report (NTR) on e-NTR, hitting the Submit button when finished, provides a way to ensure applicants that they have completed all the required action items as part of the NTR filing experience.

If you are having a technical problem filing an NTR, you can contact Scott Leonardi at the Strategic Partnership Office (SPO) at robert.s.leonardi@nasa.gov or 301/286-4698. If you have a problem answering any of the fields or questions in the application, you can contact Josh Levine at joshua.h.levine@nasa.gov or 301/286-6705.

This is a gentle reminder to anyone who fills out an NTR on e-NTR, not to forget to hit the Submit button when you are done. It will be greatly appreciated by the SPO!



Senior Goddard leadership present their vision of Goddard 2040 at the Town Hall. Photo Credit: GSFC

Center Director Shares Her Vision of Goddard 2040

Partnerships and Technology Transfer to Play a Key Role

As NASA Goddard looks to the future, its legacy will be framed around advancing the science and technologies that enabled some of its most compelling missions. These missions center around Artemis and Mars exploration, understanding and responding to our rapidly changing world, protecting our infrastructure on Earth, shielding our astronauts from space weather, and finding life beyond our planet. There are many outstanding challenges and questions that engineers and scientists have yet to tackle or answer, requiring a sustained effort to eventually achieve.

In one of the most eagerly anticipated Town Hall meetings since she became center director, Dr. Makenzie Lystrup and senior Goddard leadership, for the first time, shared the vision and strategy of both Goddard 2040 and NASA 2040 with the entire Goddard workforce community on November 1. Lystrup explained that NASA 2040 is about “what the agency itself must do to evolve and transform internally in order to meet the needs of the future.” Goddard 2040 provides a “snapshot” of where the center is now and a “roadmap” for the journey ahead.

“We cannot refrain from moving ahead in the future,” stressed Lystrup at the Town Hall that took place at Wallops. “We are not only thinking about how we attack our current challenges as best we can but how we make decisions that will set us up for the long term. NASA 2040 and Goddard 2040 are meant to communicate that we are on a long-term path here because some of the changes and improvements that we want to make are going to take a sustained effort and time to get to, while others are going to happen quicker. But what we wanted to do as a team was come up with a guiding vision of where we want the center to be as a whole and who do we want to be in the year 2040.”

Deputy Director for Technology and Research Investments Dr. Christyl Johnson said Goddard 2040 is about being ready to face and solve NASA’s toughest and broadest science, engineering, and technology challenges. “What we want to evolve to by 2040 is an agency that has a clear and articulated strategy of what we will and will not do in the future,” said Johnson, who has been tabbed to take the leadership role for the technology elements of the NASA 2040 exercise.

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“That means setting milestones and organizational goals aligned with the 2040 vision. We want to make sure that we all have clear roles and responsibilities and that is not just within one organization but across the entire agency. That also means a refined budget process that is strategic and accounts for the total cost of missions, and a strategic workforce plan. This is a long-term process.”



Dr. Makenzie Lystrup speaks about Goddard 2040 at Town Hall. Photo Credit: GSFC

Lystrup introduced seven Vectors of Goddard 2040, comprised of what she called “the guiding stars” that will shepherd Goddard as the center moves forward over the next 17 years. She explained that these seven Vectors are designed to help people make decisions on the kinds of investments that Goddard needs to make every day – including for example, who the center forms partnerships with. Those decisions, she stressed, must be guided by an overarching vision strategy made up of Vectors.

One of the key “guiding stars” is Vector 5, Expanding Our Collaborations and Partnerships. This Vector focuses on creating an easier pathway for Goddard to share its inventions and science knowledge through technology

transfer with the private sector, the aerospace industry, academia, and non-profits. Through the efforts of Goddard’s Strategic Partnership Office (SPO) and the Office of Chief Counsel, the ultimate goal of Vector 5 is to continue to stress the importance of engineers and scientists filing their New Technology Reports (NTRs) and receiving patents so their innovations can eventually be licensed to private industry.

“We want to focus on more technology development, but we are not going to be able to do more without partnering more,” said Lystrup. “That means making smart choices about tech transfer and what we are putting out to industry. That is one reason partnerships are so important. That does not often even mean an exchange of money with partners, sometimes it is just the collaboration that ends up increasing what we can do and what we can bring to the world.”

Among the other goals of Vector 5 include:

- Developing the shared spaces, both physical and virtual, for enhanced collaboration
- Promote opportunities for two-way, symmetrical thought exchange with academia, industry, other governmental partners, and other NASA centers
- Create a nimble technology transfer process that operates at the speed of industry via improved process and sharing spaces
- Expand partnerships with state and local organizations and leverage strong state and local technology and aerospace ecosystems
- Expand Wallops Flight Facility partnerships to achieve near weekly launch frequency

“There are always perceived barriers about how people can partner and work with the federal government. One of the goals of Vector 5 is to not only make sure people know how to partner with us, but also make sure they know how easy it can be, so we can share our innovations with the world.” said Goddard Chief Counsel Dave Barrett, who introduced Vector 5. “In relation to tech transfer, we do great things at Goddard but none of that matters if it does not get out to the public. That is why we developed Vector 5, to help make sure the general public gets the benefit of our innovations.”

Among the six other Vectors outlined by Lystrup at the Town Hall are, Advance Multidisciplinary Space Science, Search for Habitable Worlds, Serve as a Hub for Earth Systems Science, Enhance Space Weather Knowledge and Applications, Foster a Culture of Inclusion and Curiosity, and Modernizing Our Campuses. A complete detailed explanation of all seven Vectors and a complete description of Goddard 2040 is located at Goddard’s internal Sharepoint site at



The Goddard 2040 Town Hall provided a “snapshot” of where the center is now and a “roadmap” for the journey ahead. Photo Credit: GSFC

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<https://nasa.sharepoint.com/sites/gsfcc> and by clicking the quick link to the Goddard 2040 Strategic Vision Booklet. “I want Goddard to have as much impact on the world as possible,” said Lystrup. “Technology transfer can be used in all of those Vectors. Technology transfer helps us understand what technologies we want to invest in and what is possible. And the need to engage with the SPO office.”

Regarding NASA 2040, Johnson explained that NASA leadership has developed seven different work streams that will have a focused responsibility. There is the **engine**, that is integrating and prioritizing work across the agency to make sure that NASA 2040 is moving forward. There is the **mission** that is going to look at all the elements of the NASA missions that are going to be undertaken by 2040. There is the **structure**, that is going to look at the roles, responsibilities, and functions of everyone involved. Also, there is the **infrastructure** that looks at the agency facilities, the **people** involved and the **budget**. And finally, there is the **technology** that needs to make sure that there are deliverable innovations and products to meet all of NASA’s missions.

“Goddard’s mission is not going to change; the center is still going to do research and science work but will evolve into the future,” said Lystrup. “I am excited about what we have developed with Goddard 2040. What we tried to do is take a totally holistic look at Goddard and make sure that we are maximizing the impact that Goddard can have [today] and, at the same time, stay relevant in the future.”



Dr. Christyl Johnson, Deputy Center Director for Technology and research investment speaks at the Town Hall, Photo Credit: GSFC

How Commercializing a Technology in Private Industry Works

The benefits from NASA Goddard technology research and development are all around us. It is not an overstatement to state that innovations developed for specific NASA missions in Goddard laboratories can be transferred to private industry and used to make significant improvements in a totally different field. Indeed, Goddard's work in space often benefits people on Earth. With its enormous and powerful mirrors capturing bits of light from more than 13 billion years ago, the James Webb Space Telescope (JWST), has since July 12, 2022, been showing the world some incredible images of the first stars in the universe. "The mirrors were one of the really critical technologies we needed to develop to enable the JWST observatory," said Lee Feinberg, optical telescope element manager for JWST and senior engineer for Optics Systems in the Instrument Systems and Technology Division (Code 550).

The algorithms developed in the Goddard laboratories for JWST's mirrors were patented and licensed to WaveFront Science, who in turn, developed it into a commercial product called the Complete Ophthalmic Analysis System (COAS). By mapping the human eye, COAS can diagnose eye conditions. "NASA was a good partner," recalled Kristian Santana, who worked as an electrical engineer on COAS at WaveFront Science.

In 2017, Johnson & Johnson Vision purchased COAS and incorporated it into the design for its iDesign product for guiding LASIK eye surgery. Today, the iDesign Refractive Studio can take safe and precise eye measurements of the visual pathways of the cornea curvature for individualized vision corrections. "Ultimately, the investments that NASA Goddard made helped Johnson & Johnson develop the technology to be useful for other applications, in this case, LASIK eye surgery," Feinberg said.

But technologies developed by NASA Goddard engineers and scientists don't just automatically get licensed and commercialized. There is a process each promising innovation undergoes to determine its commercial potential. It all starts with a New Technology Report (NTR). Each year, Goddard's Strategic Partnership Office (SPO) receives hundreds of NTRs from center engineers and scientists. SPO reviews each one to assess what Josh Levine, a tech manager at SPO, calls a "value proposition."



iDesign Refractive Studio device. Photo Credit: Johnson & Johnson Vision

“After reading the NTR, the first thing we need to do is characterize what a piece of technology is and isn’t,” explained Levine. “Once we fully understand what it is, we need to then find a private company whose interest in the technology overlaps with ours. To do that, we conduct an internal marketing effort. This can take the form of going out and cold calling companies. Or sometimes a company will learn about the technology through the grapevine and make an inquiry.”

During the assessment process, SPO technology managers contact potential end users of the technology. This can either be people who want to develop the technology for their own application, or it can be a manufacturer who will build it and later sell it to the scientific community. Sometimes it is a component maker, who wants to build a supply chain for parts.

“A couple of companies are called during the assessment period or phase,” notes Levine. “They might say this is a great piece of technology, there is a need in the market, and they would be interested in using it. On the other hand, they might say the market is moving away from this type of solution, another technology is cheaper, or this is too difficult to use. So SPO’s role is to field interest in the technology. The art of technology transfer is to know who to ask and how to ask.”

Levine said that there is an important role that the inventor plays in the assessment process. Companies who are potentially interested in licensing a technology will need information transferred to them that is relevant for understanding and making use of the technology.

“They are going to want to know things like what it takes to develop the technology, what are the costs, material, facilities, and software involved – everything that is involved in making it. The innovators are uniquely positioned to share with the prospective licensee what is involved to make the technology,” stressed Levine. “The prospective company can then decide if this is a good investment for them to make or not.”

When the technology managers at SPO think that an invention has commercial potential, and there are companies that are interested, it will be turned over to Goddard’s Office of the General Counsel (OGC), who will then apply for a patent from the U.S. Patent and Trademark Office (USPTO). No technology can be licensed and commercialized to private industry unless it receives a patent from USPTO.

“The very first thing we do is work with SPO and the inventor of the technology to make sure we understand the gist of the invention and then make an evaluation to determine if the technology is eligible for a patent,” emphasized Matt Johnston, patent counsel at OGC. “Is this innovation in fact something new, different, and useful, and are there no bars or obstacles that prevent filing for a patent?”

This is why both Levine and Johnston both recommend that the inventor of the technology fully answer Section IV (Speculation Regarding Potential Commercialization Applications and Point of Contact) of their NTR submission to the best of their ability. The more completely an inventor can respond to this section and identify companies that are producing similar products, the better SPO technology managers can assess commercialization potentials and the better the patent attorneys can assess uniqueness of the technology.

“Many times, with some of our more popular technologies, we end up issuing licenses to multiple companies. Depending on the license agreement, a technology can be licensed to multiple end users,” explained Levine. “Many times, during the assessment phase of doing research on the potential commercialization of a technology, it is a lot like the ‘canary in the coal mine.’ If there is one company that is interested in the technology, often times there are more.”

“There are a lot of amazing technologies being developed at Goddard,” said Center Director Dr. Makenzie Lystrup. “We have missions that are truly unique in the world. So, Goddard has an incredible footprint that nobody else does. Technology transfer and partnerships are a key part of that.”



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Reminder

Submit your NTR

For more information,
visit invention.nasa.gov.



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