THE INNOVATION CATALYST

DECEMBER 2021

IN THIS ISSUE:

TECH TRANSFER TIP

with Tech Manager Joshua Levine

As an innovator, **you are the expert** on your invention—your viewpoint is invaluable to elevate the subject matter of your patent application.

UPCOMING EVENTS:

INNOVATOR HOUR: TUESDAY, DECEMBER 14, 1-2 P.M.

INNOVATOR HOUR: TUESDAY, JANUARY 11, 1-2 P.M.

THE COFFEE BREAK: TUESDAY, JANUARY 18, 1-2 P.M.

STRATEGIC PARTNERSHIPS OFFICE

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SHARING THE SCIENCE:

EDUCATING AND INNOVATING WITH NASA

"The students of today are the scientists, the engineers of tomorrow," says award-winning innovator and Wallops Flight Facility research engineer Geoff Bland, when asked about the importance of educational outreach at NASA.

Education has long been a significant element of NASA's mission—particularly inspiring and promoting STEM engagement through unique learning opportunities. Innovators like Bland play a vitally important role in creating "authentic learning experiences with NASA's people, content, and facilities" (NASA STEM Engagement).

Bland's foray into educational outreach may have started by accident in his college days. Back then, Bland made model rockets, and a Teaching Assistant asked if he would like to make $75 leading a workshop for approximately 80 students. "At the time, I just considered it as an additional revenue stream," he says. "I guess that would be my contact with the educational field, at least the start of it."

It may have been the start, but certainly not the end. At Wallops, Bland and his model rockets would go on to the Engineering Aviation Series program at the University of Maryland, Eastern Shore."It was something to do!" he maintains with a laugh. Later on, Bland's work with drones, rovers, kites, and even tethered blimp simulators would continue to give students and educators a glimpse of remote sensing and Earth Sciences through IRADs, Space Act Agreements, and other collaborations.

However, Bland's contributions would begin to take off around 2010, when he was contacted by the Wayne Regional Educational Service Agency (RESA). At the time, RESA received a NASA Cooperative Agreement Notice (CAN) to explore ways to monitor water collection sites where students compared water quality in Wayne County, Michigan. Bland recalls his proposal was fairly simple: "Do you all fly kites?"

Why kites? They are simple, low-cost, and easy to use. Coincidentally, Bland and NASA technician Ted Miles had just invented a simple, low-cost, and easy to use aerodynamically stabilized device that could be attached to the kites and equipped with all sorts of remote sensors.

Patented in 2012, the AeroPod quickly proved to be a versatile tool for in-situ measurements, largely due to its simplicity. According to Bland, anyone can start collecting data after only a day of training, making the invention a great introduction to field observations and real-world data for hands-on learning.

The AeroPods' ease-of-use also allows room for the implementation of NASA-style operation procedures, which Bland stresses is key. These elements, inherent to any NASA mission procedure, encompass Science, Technology, and Operations. There are checklists to go through, emergency procedures to cover, and a whole lot of teamwork and cooperation involved.

"Nobody gets to sit in a corner," Bland says. "As a scientist or an engineer, you don't work in a vacuum."

To Bland, the great value of implementing and following these procedures lies in the connection between these steps and the payoff, giving students more than just the "big picture."

"Meaningful information has to follow some kind of structure," he adds. "It's important to have fun, but fun without structure is not as valuable for learning."

Bland's initial collaboration with Wayne RESA has since expanded and evolved over the last ten years, becoming the NASA Science Activation Team AEROKATS and ROVER Education Network (AREN). AREN uses the Global Learning and Observations to Benefit the Environment Program (GLOBE) platform to share data internationally. With a special educational license for the use of AeroPods, other institutions and organizations have joined AREN, providing data and feedback to continue developing the invention and the network.

EDUCATIONAL LICENSES

SPO EXPLAINS:

WHAT IS AN EDUCATIONAL USE LICENSE?

An **educational use license** is a unique type of licensing agreement developed by Goddard's Strategic Partnerships Office to license NASA technologies at no cost to organizations using them for educational purposes. It is an evolution of an earlier **prototyping license**.

The **prototyping license** created by SPO in the early 2000s sought to promote NASA technologies by providing a no-cost license to small engineering services companies with the capabilities to produce prototypes for those technologies. Under this license, companies only pay royalties if they provide prototyping services to a prospective lincesee.

Nearly a decade later, when Geoff Bland's AeroPod became available for licensing, SPO modified the old prototyping license for educational purposes. Under this type of agreement, organizations licensing the technology do not pay financial royalties—instead, lincensees provide alternate consideration in the form of data and improvement sharing .

"SPO was incredibly impactful," said Bland. "The license opens up possibilities of working with several different groups and offering NASA technologies." Additionally, the license requires feedback on any potential improvements to the technology itself, something Bland emphasizes is absolutely crucial for further development.

In the case of the AeroPod, several different models have emerged from Bland's original design, making room for more instruments or different applications. "We have to have feedback," he reiterates. "Feedback helps improvement."

EDUCATIONAL LICENSES 101:

Unlike other license agreements, there are no financial royalties associated with an educational use license as long as the technology is used for educational purposes. There may also be other restrictions depending on the technology and its applications.

SPO has standardized the application forms for this type of agreement, making sure to address all required items and terms beforehand. Standad terms eliminate the need to negotiate and expedite the process, meaning this type of agreement can potentially be processed more quickly.

As a no-cost license, an educational license does not fall under the usual license categories such as standard commercial or start-up licenses. Therefore, though licensees can submit their applications through ATLAS, we recommend submitting them directly to SPO.

Do you want to know more about lincensing your technology? SPO can help you reach out to your Licensing Manager or answer any other questions you may have. Get in touch!

techtransfer@gsfc.nasa.gov

TECH TRANSFER: HOW CAN YOU HELP ADVANCE INNOVATION?

ADVANCING INNOVATION
TRAINING AT NASA GODDARD

SPO works to support technology transfer by working with innovators to process and evaluate NTRs for patenting, market and negotiate licenses, and eventually license their technology. Here are some ways you can contribute!

RESEARCH AND DEVELOPMENT (R&D):

KEEP ACCURATE AND DETAILED NOTES during R&D, particularly if there are multiple innovators contributing to different aspects of the new technology. The information provided creates legal documents determining inventorship for patent purposes. It is **vital** to keep accurate records in the event there are any inventorship issues down the line.

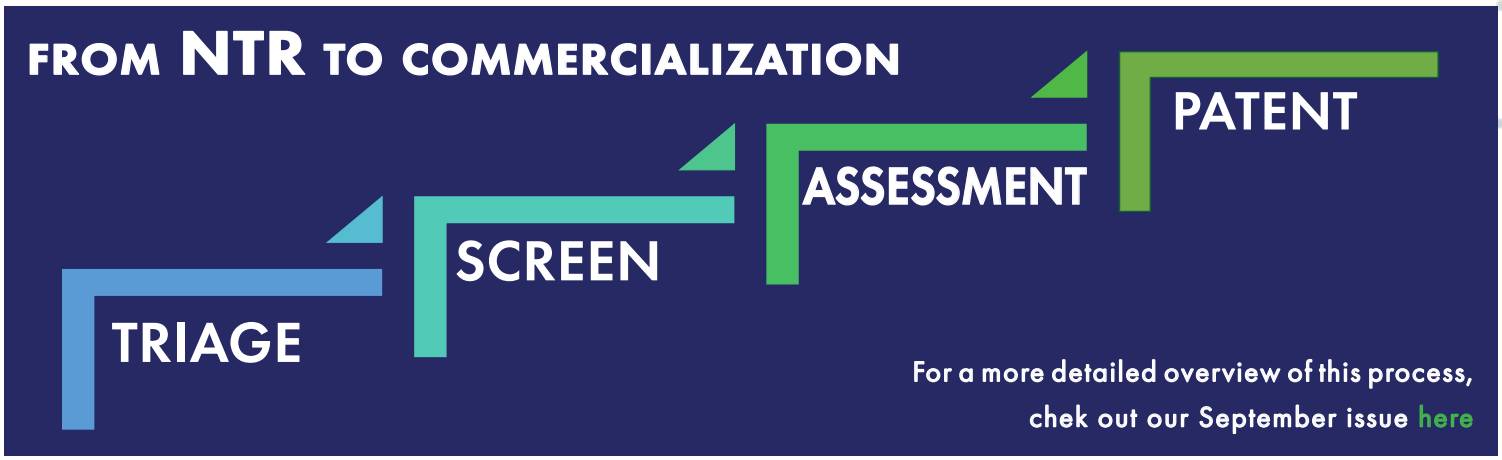
SUBMITTING NEW TECHNOLOGY REPORTS (NTRs):

When should you submit an NTR? The short answer is **the sooner, the better.** More specifically, you should **SUBMIT AN NTR BEFORE ANY PUBLIC DISCLOSURES** of your invention to protect intellectual property rights. A disclosure made before a patent application has been filed can be held against you, potentially forfeiting patentability rights. When in doubt, **contact SPO!**
Unsure of what to report? Any innovative improvements can be reported—you can submit an NTR for an entire invention or for individual components and improvements. If different parts of your invention are distinct from one another, each may require a different patent application and should be disclosed separately. You can even submit an NTR for an idea, as long as you intend to research and pursue it further.

While SPO is interested in ideas that will lead to a commercially viable invention, do not let that stop you from submitting your NTRs. That determination is made by SPO and the Office of General Counsel (OGC) after a comprehensive assessment—when in doubt, get in touch with SPO.

WORKING WITH SPO AND THE OFFICE OF GENERAL COUNSEL:

Remember to **be responsive** when contacted by SPO, OGC, or supporting organizations about your invention. You are the expert, and your input is important! You can even let us know if you have potential collaborators or licensees in mind, and we can help you negotiate licenses and partnership agreements.



COUNTDOWN TO WEBB:

COLLABORATION AND INNOVATION

The James Webb Space Telescope (JWST) has been a massive undertaking decades in the making. Scheduled to launch aboard an Ariane 5 rocket later this month, Webb is a testament to great technological advancements that would not have been possible without the collaboration and participation of hundreds of partners and thousands of individuals across NASA and around the globe.

306 PARTNER ORGANIZATIONS

29 STATES

3 SPACE AGENCIES

14 COUNTRIES

6 NASA CENTERS

LAUNCH: WEDNESDAY, 12/22

Though construction of various individual components—such as its 18 hexagonal mirror segments—began in 2004, Webb would spend a significant portion of its life on Earth at Goddard. From 2012 to 2017, many of these components were assembled, installed, and tested at GSFC, counting with the contribution of several innovators and partner organizations.

74 Related New Technology Reports (NTRs) submitted at Goddard since construction began, with spinoffs to other industries and daily life.

9 Partnership agreements executed with partners in several fields ranging from aerospace to academia.

5 Goddard Spinoffs to manufacturing, health and medicine, and industrial productivity.

SBIR HIGHLIGHT SBIR grants funded innovations like QED Technologies' stitching interferometers (SSI and ASI), advancing optics measuring and manufacturing!

WEBB SPINOFFS

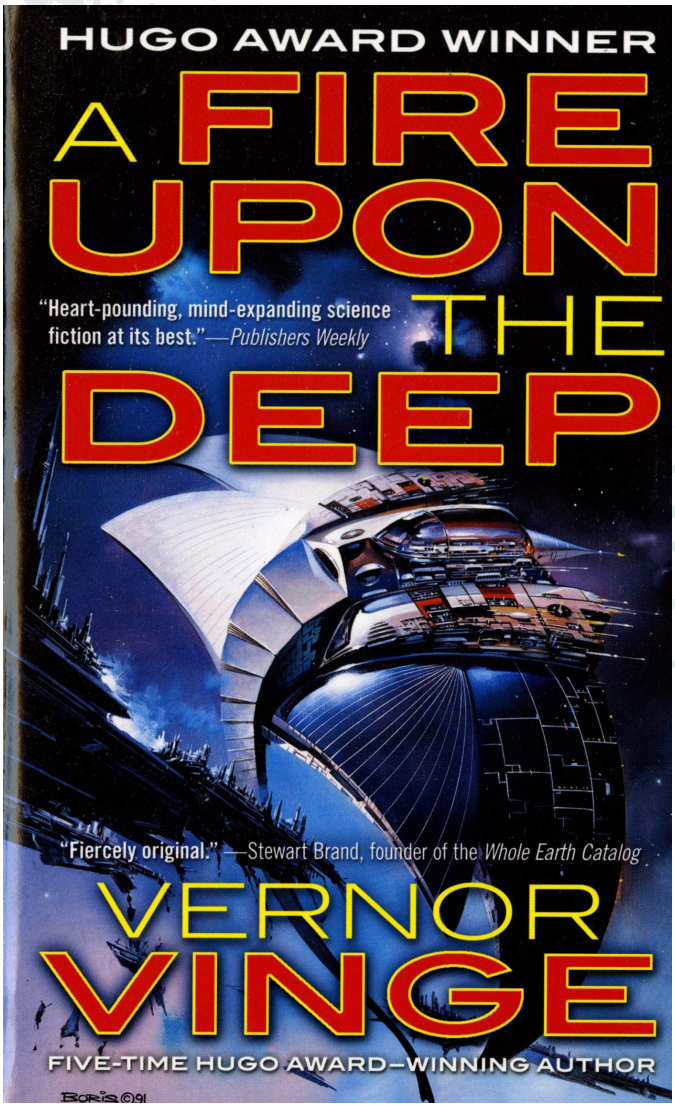
SCANNING SHACK-HARTMANN SENSOR: system developed to measure and test Webb's mirrors after grinding is also used to measure the human eye, assisting medical research, diagnosis, and surgery.

LASER INTERFEROMETERS: highly precise test devices that use pulsed lasers to address vibrations when testing composite structures at cryogenic temperatures are now used in aerospace, semiconductor, and medical industries.

APPLICATION-SPECIFIC INTEGRATED CIRCUITS (ASICS): Webb's investments in programmable cryogenic ASICs assisted in the repair of Hubble's Advanced Camera.

NEAR-INFRARED DETECTORS: detectors developed for Webb are now used in Hubble, other NASA missions, as well as in Earth science and national security applications.

THE LITERARY X-CHANGE BOOK OF THE MONTH



WHAT IS THE LITERARY X-CHANGE?

It is a community library sponsored by the Strategic Partnerships Office launched in 2021—with a little help from our partner, TOR Books. The library is located in the lobby of Building 22, and it is available to the entire Goddard community. Come check it out!

Here's how it works:

TAKE ONE

If a book strikes your fancy take it! Read it, enjoy it, and when you're done, share it with a friend or bring it back to the X-Change.

GIVE ONE

It's up to everyone to keep the library stocked. Bring books you'd like to share with your community when you can, and continue being a friend of The Literary X-Change!

ABOUT *A FIRE UPON THE DEEP*, 1992:

Thousands of years hence, many races inhabit a universe where a mind's potential is determined by its location in space, from superintelligent entities in the Transcend, to the limited minds of the Unthinking Depths, where only simple creatures and technology can function. Nobody knows what strange force partitioned space into these "regions of thought," but when the warring Straumli realm use an ancient Transcendent artifact as a weapon, they unwittingly unleash an awesome power that destroys thousands of worlds and enslaves all natural and artificial intelligence.

Fleeing the threat, a family of scientists, including two children, are taken captive by the Tines, an alien race with a harsh medieval culture, and used as pawns in a ruthless power struggle. A rescue mission, not entirely composed of humans, must rescue the children-and a secret that may save the rest of interstellar civilization.

(synopsis by Worlds Without End)