



# AFWERX · SPACEWERX

**FY2024** ANNUAL REPORT



# UNLEASHING AMERICAN INGENUITY

## ON THE COVER

Second Lt. Jacob Geil, Project Arc engineer, measures part of a ram air scoop fan assembly Sept. 22, 2022, as part of an initiative to embed engineers at operational wings to solve technical problems. As part of the Project Arc program, Geil and his teammate were stationed at Barksdale Air Force Base, La., for six months to help develop, test and transition Airmen and commercial solutions. U.S. Air Force photo by Staff Sgt. Christopher Tam.



Maj. Brett Gedman, 301st Fighter Squadron, readies for a mission wearing the Next Generation Fixed Wing Helmet March 24 at Eglin Air Force Base, Fla. The 46th Test Squadron engineers have begun developmental testing on NGFWH with F-22 pilots while the aircraft are stationed at Eglin. These tests mark the second round of developmental testing since the Air Force announced the new LIFT-manufactured helmet last year. U.S. Air Force photo/Samuel King Jr.



U.S. Air Force 2nd Lt. Lauren Kahlig, 337th Air Control Squadron air battle manager instructor, helps prepare Senior Airman Janiece Vera, 81st ACS weapons director, before an offensive counter-air training mission at Tyndall Air Force Base, Florida, March 29, 2024. U.S. Air Force photo by Senior Airman Briana Beavers.



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# MESSAGE FROM THE DIRECTOR

What a change a year makes! In FY24, we continued to unify our programs into overlapping components of a collaborative, cohesive, mission-focused organization to create the most valuable impact for our nation and military.

We are living in times of incredible change in the marketplace. Emerging technology is rapidly transforming the way we live. It affects how we find information, produce digital content, design and build things, even how we move. These same technologies will be influential to the way we sense, move, shoot, communicate, and think on the battlefield. It is ESSENTIAL that we stay ahead of this technology curve for our nation's warriors, and you are critical to that task at AFWERX.

We spent much of the year putting AFWERX in a position to succeed in this rapidly changing world by aligning ourselves to the needs of the Air and Space Forces, aligning with the marketplace, and optimizing our workforce to focus on the most important things.

My priorities since I took command in 2022 remain, as always:

1

## Strengthen the Team

Cultivate a cohesive and empowered workforce by effectively communicating opportunities for professional growth, fostering a supportive onboarding experience and promoting a culture of recognition and teamwork.

2

## Commercialize the Force

Enhance AFWERX's organizational transparency and engagement in order to expedite the adoption of commercial innovations that support the Department of the Air Force's highest priority missions.

3

## Connect the Ecosystem

Promote robust integration and collaboration within the Department of Defense innovation ecosystem to enhance synergies and drive mission-critical innovations.

It's been an honor to have been the Director of AFWERX for the past two years, and I am grateful for the opportunity to have worked with so many talented individuals. Please enjoy reading this report, as it reflects the hard work and successes of my AFWERX teammates over the past year. I look forward to what lies ahead, as we continue to execute this vital mission for our nation, bringing the best innovations into our force!



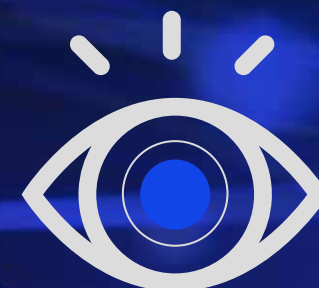
Col Elliott Leigh  
AFWERX Director





## MISSION

Accelerate agile and affordable capability transitions by teaming leaders in innovative technology with Airman and Guardian talent.



## VISION

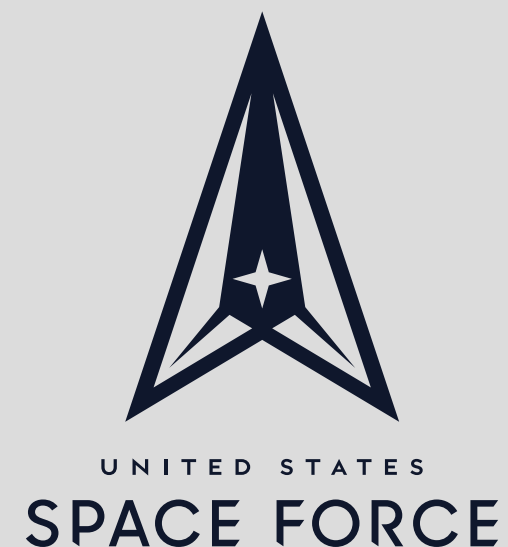
Forge an innovation ecosystem that delivers disruptive Air & Space capabilities.



## MANTRA

Unleashing American Ingenuity





## AFWERX & SPACEWERX EXECUTIVE SUMMARY

In FY24, AFWERX, the innovation arm of the Department of the Air Force (DAF) and its dedicated space division, SpaceWERX, solidified their role as vital engines of national security, accelerating the transition of cutting-edge capabilities into the hands of our Airmen and Guardians. Facing an evolving global landscape and the pressing need to revitalize the defense industrial base, AFWERX and SpaceWERX have focused on three core priorities: Strengthening the Team, Commercializing the Force and Connecting the Ecosystem. This unified approach has yielded significant results, directly supporting the DAF's strategic objectives such as Agile Combat Employment (ACE), reforming acquisition and ensuring space superiority.

FY24 was a year of impactful transitions. We empowered Airmen and Guardians through Spark, fostering a culture of innovation and generating \$1.5M in follow-on funds for airmen and guardian projects and \$97M+ in Challenge program awards that address critical DAF needs. Ventures fueled the growth of small businesses, investing \$1.8 billion in promising technologies with either military or dual-use potential. Also in FY24, 470 companies working with AFWERX transitioned to Phase III contracts with DAF or other government customers totaling \$1.44 billion. Prime strategically nurtured emerging markets crucial to national security, accelerating the development and

adoption of critical technologies in areas such as autonomy, compact rotary engines and cutting-edge space systems. One example of this impact is Starfish Space, developer of the Otter spacecraft and other technology for on-orbit servicing of satellites, that has rocketed from a startup to a planned 2026 launch in just a few years.

AFWERX and SpaceWERX serve as a critical bridge between the DAF and the dynamic commercial innovation ecosystem. We are not just funders; we are strategic partners, providing small businesses with access to expertise, resources, and connections within the defense community. This collaborative approach ensures that the technologies we invest in not only enhance military capabilities, but also contribute to broader economic growth and maintain America's technological leadership.

This report details how AFWERX and SpaceWERX are building a robust pipeline of innovation, from discovery to transition, ensuring the DAF remains agile, competitive and ready to meet the challenges of today and tomorrow. We invite you to explore the successes and insights within, and to join us in Unleashing American Ingenuity for the defense of our nation.

# GROWING AMERICA'S INNOVATION INDUSTRIAL BASE WITH INVESTMENT IN FY2024

## THE BIG PICTURE:

### AFWERX SINCE INCEPTION:

COMPANIES HAVE TRANSITIONED  
TO **PHASE III** **1,881**

**\$7.5B** **PHASE III  
CONTRACTS  
VALUE**



**2,655**  
NEW COMPANIES  
ADDED TO DAF'S  
SMALL BUSINESS  
PORTFOLIO

**1,780** **CONTRACT  
AWARDS**

- **1,002** Open Topic awards to **725** Companies
- **588** Specific Topic awards to **371** companies
- **184** STRATFI/TACFI awards to **158** companies

**233**

(13% OF TOTAL  
CONTRACT AWARDS)  
NEW COMPANIES  
WORKING IN THE DAF  
ECOSYSTEM

**195**  
Open Topic

**38**  
Specific Topic



EVALUATED  
**10,105**  
SUBMISSIONS

**12.4%** improvement in Open Topic  
Time-to-Award over FY23

**33%** improvement in STRATFI  
Time-to-Award over FY23

**30%** improvement in TACFI  
Time-to-Award over FY23

**RAPIDLY BUILDING A  
TECHNOLOGY PIPELINE**

BUDGET:  
**\$1.8B**  
Invested in promising tech  
with dual-use potential

**AFWERX PORTFOLIO  
COMPANIES THAT  
FOUND MILITARY, GOVT.  
CUSTOMERS**



**470** FY24 PHASE III CONTRACTS  
**VALUED AT \$144B**

**11% INCREASE**  
OVER 420 FY23 PHASE III CONTRACTS

**4** Workshops (**483** Participants) & **6**  
Showcases (**600** participants) resulting  
in **69** contracts **valued at \$95M+**

**SPARK  
CHALLENGES**

**SPARK  
REFINERY**

**5** Cohorts working with **73** Airman and  
Guardian graduates on **32** Projects with  
follow-on funds **valued at \$87.2M**

## TARGETED WARFIGHTING TECHNOLOGIES

- Trusted Ai and Autonomy
- Integrated Sensing and Cyber
- Hypersonic
- Quantum Science
- Directed Energy
- Human-Machine Interface
- Renewable Energy Generation and Storage
- Advanced Materials
- Biotechnology
- Integrated Network Systems-Of-Systems
- Microelectronics
- Advanced Computing and Software
- Space Technologies
- Future Generation Wireless Technology (Futureg)



# PART ONE:

## DISCOVERY



# PART ONE: **DISCOVERY**

In today's rapidly evolving threat landscape, AFWERX and SpaceWERX are on a critical mission – equipping America's Airmen and Guardians with a decisive technological edge. Our 'Discovery' operation serves as the frontline of this effort, proactively identifying and integrating groundbreaking commercial technologies that outpace traditional government research and development (R&D) cycles. We do not just react to change; we anticipate it, ensuring our forces are prepared for warfare of the future.



Photo by Dennis Stewart.

## Our strategy hinges on **three key pillars**:

- ▶ A highly skilled and empowered team strategically positioned across the nation's innovation hubs.
- ▶ A robust and dynamic innovation ecosystem connecting military operators, innovators, researchers and industry partners.
- ▶ A streamlined process for channeling promising technologies into the DAF.

**This approach allows us to tap into the pulse of American ingenuity, fostering a dynamic exchange of ideas and expertise.**



Our Team

Our ‘Discovery’ operation is powered by a diverse team of civilians, military and contractors, representing a wide range of expertise, including program management, contracting, finance, engineering, communications and information technology. This diverse skill set is crucial for effectively identifying, evaluating and transitioning promising technologies. For example, our contracting specialists ensure we can rapidly execute agreements with small businesses, while our engineers assess the technical viability of proposed solutions. The military personnel, with their operational experience, provide invaluable insights into the real-world needs of the warfighter, ensuring that our discovery efforts align with the DAF’s most pressing challenges.



Take, for example, the Acclimate Cooling vest. Capt. Justin O'Brien, then a Security Forces officer, knew from experience the physical toll extreme heat takes on someone wearing body armor. That knowledge inspired him to look for a way to protect warfighters from heat-related illnesses while operating in hot climates. With support and guidance from our Spark division and other DAF organizations, he developed a cooling vest that will enhance warfighter safety and effectiveness. With the vest refined for sale, Bunker Supply Co., powered by Small Business Innovation Research (SBIR) funding, has taken on the manufacturing and order-fulfillment duties.



Our Footprint

Our organization is geographically dispersed by design, positioning our prolific and agile team to draw upon the nation’s best talent and engage directly with its innovators. We are **strategically located in 25 states** across the continental United States, with key hubs in Austin, Texas; Los Angeles, California; and Washington D.C., and a site in Dayton, Ohio.

These locations provide us with access to vibrant innovation ecosystems, including an ever-expanding roster of small businesses in leading industries, universities, research institutions and venture capital firms. In El Segundo, California, for example, the SpaceWERX hub at The BR-DGE held **33 events** in FY24. Those events drew **2,543 visitors**, with **222 companies** engaging with us through our Launchpad sessions, which provide an immersive introduction to SpaceWERX.



Photo by Dom Digital Media, LLC.

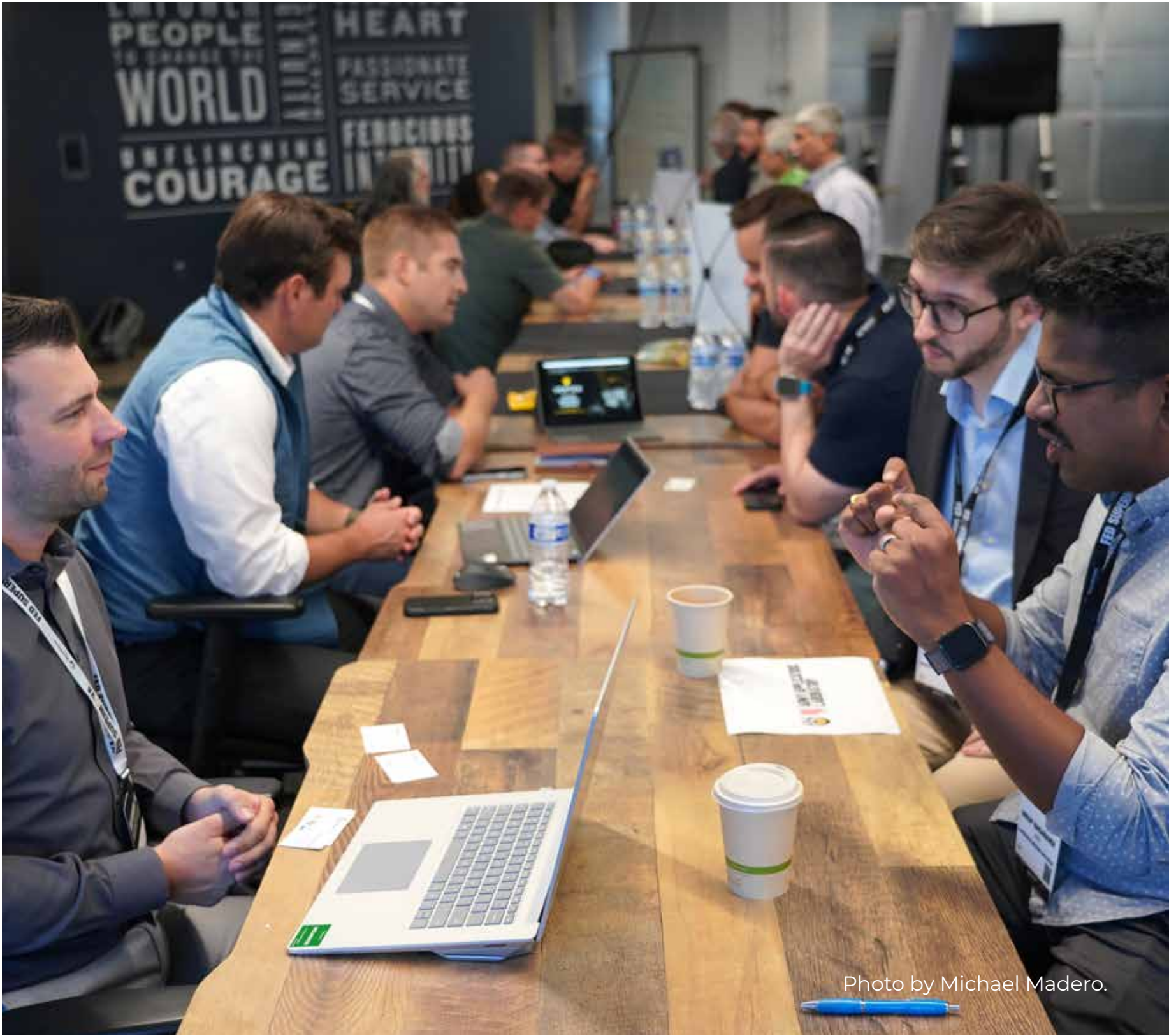


Photo by Michael Madero.



DAYTON, OH  
SITE



AUSTIN, TX  
HUB



WASHINGTON DC  
HUB



LOS ANGELES  
HUB



MEMBERS IN  
**25**  
STATES





FY24 OUTREACH AND ENGAGEMENT  
BY THE NUMBERS

DIGITAL  
ENGAGEMENT

SOCIAL REACH

89,017 Followers Across  
All Platforms  
3.6M Impressions  
120,923 Clicks

EMAIL

30,081 Subscribers  
97.2% Delivery Rate  
79,761 Total Recipients (Delivered)  
60.9% Engagement Rate

WEBSITES

702K Pages Viewed  
(= 60% Increase over 438K in FY23)  
181K Clicks  
(= 176% Increase over 66K in FY23)  
372M Engagements  
(= 42% Increase over 263K in FY23)

MEDIA  
COVERAGE

Published articles  
highlighting AFWERX efforts  
39

25,983  
MEDIA MENTIONS

20  
Leadership interviews  
with multiple national  
media outlets

EVENTS

ATTENDED  
155 Events  
In Over 35 States

HOSTED IN-PERSON EVENTS  
23 Virtual Events  
2,295 Attendees  
11 States  
2 International Locations

HOSTED EDUCATIONAL  
WEBINARS  
91 Webinars  
9,792 Attendees

Our Outreach

Through targeted outreach, digital engagement platforms and active participation in key events, we create a powerful funnel, channeling a steady stream of game-changing capabilities into the DAF. Both in-person and online, AFWERX and SpaceWERX teams worked diligently to reach small businesses, researchers and others. Our representatives attended 155 events in 35 states. We also hosted 91 webinars, drawing nearly 9,800 attendees. Our social media accounts, email campaigns and websites also generate high engagement rates. For example, AFWERX and SPACEWERX join other DOD defense innovation units twice a year at Capital Factory in Austin, Texas, to network with over 2,000 innovators each at Fed Supernova and Capital Factory House events. For small businesses, these events are packed with panels, one-on-one office hours and networking to forge connections with government, small businesses and venture capitalists to find pathways to the DOD. Expanding beyond defense conferences to the innovation circuit, DOD gains access to non-traditional small businesses, including industry and academia, with novel technologies and research ready to accelerate technology transition to the Warfighter.



Arthur Grijalva, SpaceWERX director, Melissa Garmoe, SpaceWERX Growth Stage Lead, and some SpaceWERX STRATFI companies pose for a photo at the Fed Supernova conference in Austin, Texas, Aug. 22, 2024. Capital Factory hosts Fed Supernova and the event brings entrepreneurs, government and industry together to collaborate on dual-use solutions that put commercial technology in the hands of the Department of Defense. U.S. Air Force photo by Matthew Clouse.



In FY24, this multifaceted approach resulted in the evaluation of 10,105 submissions, including 5,518 Phase I; 3,394 Direct to Phase II; 822 Phase II; 164 TACFI; 142 Sequential Phase II; 42 STRATFI; and 22 Phase III commercial technologies, leading to the identification of 1,607 (896 Phase I and 711 Phase II) promising solutions for DAF challenges. The discovery process has yielded several critical technologies, some of which took significant strides forward in FY24. With support from the Spark and Prime divisions, the AFWERX X-band Emitter, a low-cost, threat-emitter system, became an operational technology supporting F-35 Lightning II pilot training. K2 Space, an aerospace firm supported by the SpaceWerx, Prime and Ventures divisions, secured \$60 million to launch its mega-class satellite platform in 2026. goTenna, a developer of mobile mesh networking technology, secured a strategic funding increase through Ventures to enhance its communication equipment while also receiving Phase III contracts from government customers.

# THIS IS HOW

**we commercialize the force, Unleash American Ingenuity and safeguard our nation's strategic advantage.**



An F-35A Lightning II flies by a prototype threat emitter Jan. 17, 2020, at Luke Air Force Base, Arizona. The prototype, which was entered as a submission for the Air Force's Spark Tank competition, was designed as a low-cost threat emitter system to be used in training for fifth-generation aircraft. The project, designed by two 56th Operations Support Squadron Airmen and an Arizona State University student, is a finalist in the third annual competition. U.S. Air Force photo by Airman 1st Class Leala Marquez.

K2 Space, AFWERX SBIR, TACFI, and STRATFI awardee, prototyping facility. Photo courtesy of K2 Space.



Air Force Research Laboratory (AFRL) researchers and technical teammates re-tasked a current fielded tool called Tactical Awareness Kit, or TAK, to directly assist extraction efforts by operators in Afghanistan in the fall of 2021 and increase the chances of success. USAF tactical air control warfighters demonstrated the capabilities of the TAK system — similar to those used during operations to evacuate U.S. citizens and allies in Afghanistan. Photo by Albert P Santacrocce.



# PART TWO:

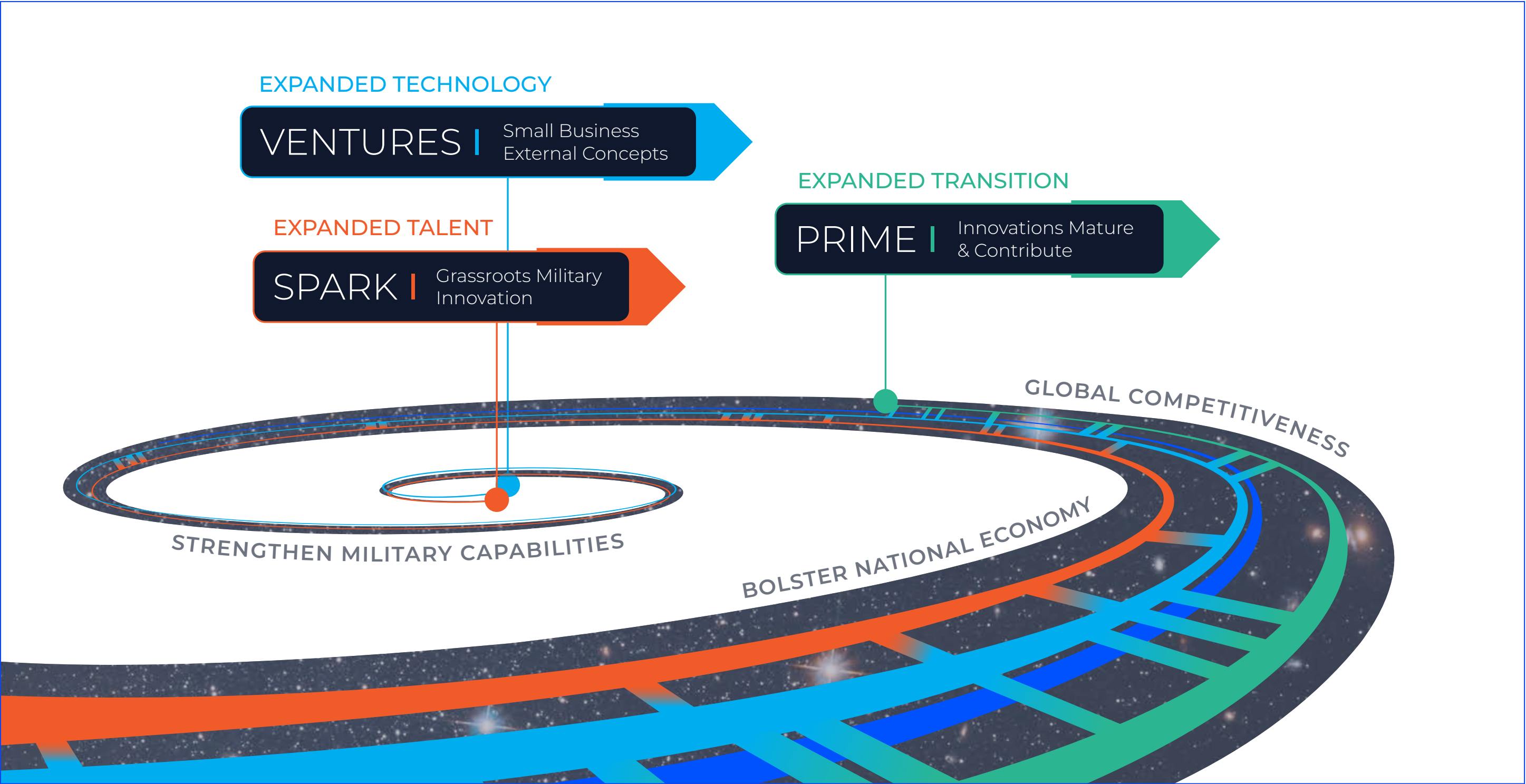
## **PATHWAYS**





# PART TWO: PATHWAYS

Having identified a wealth of promising technologies through our discovery efforts, AFWERX and SpaceWERX now embark on the critical phase of translating these innovations into tangible warfighting capabilities. AFWERX and SpaceWERX do not simply fund innovation; we build pathways. Our ‘Pathways’ programs – Spark, Ventures, and Prime – serve as strategic on-ramps, guiding promising technologies from concept to reality. We recognize that innovation requires more than just capital; it demands mentorship, connections and access to specialized resources. Through our unique approach, we provide small businesses and innovators with the comprehensive support they need to thrive, ensuring that their disruptive technologies reach the warfighter and strengthen our national security.





**SPARK** ignites innovation from within the DAF ranks. It empowers our Airmen and Guardians to transform their frontline insights into tangible solutions, enhancing warfighter effectiveness and lethality. By fostering a culture of creativity and providing access to resources and expertise, Spark fuels a groundswell of innovation that strengthens our forces from the bottom up. Spark's Catalyst and Combat Edge branches provide a comprehensive ecosystem for nurturing and scaling grassroots innovation.

# SPARK PATHWAY

**Igniting  
Innovation from within**

## Cultivating Innovation Networks

### SPARK CELLS

Decentralized innovation hubs positioned at 87 Air and Space Force bases worldwide, Spark Cells act as dynamic pipelines connecting Airmen and Guardians with the resources they need to solve pressing local challenges. These cells operate with an open and flexible approach, evolving to meet the unique needs of commanders and units, ensuring innovation is always aligned with operational priorities.

### SPARK CELLS IN FY24





# Grassroots Innovation

Senior Airman Devon Word’s innovative 20mm replenisher table insert, developed at RAF Lakenheath’s 48th Munitions Squadron, exemplifies not only the power of Spark Cells to advance grassroots innovation, but also the DAF’s commitment to fostering it. By addressing a critical issue of ammunition jams during loading, Word’s design significantly enhances operational safety and efficiency. The result? A proven reduction of machine malfunctions and a projected saving of over 750 man-hours annually for the 48th Fighter Wing and the DAF. This success, championed by his local Spark Cell to gather the on-hand resources and creation space, demonstrates the power of Airmen-led initiatives to drive meaningful improvements in operational effectiveness and quality of life.



U.S. Air Force Senior Airman Devon Word, 48th Munitions Squadron conventional crew chief, holds his innovation before a 20 mm ammunition guide insert demonstration at RAF Lakenheath, England, Sept. 11, 2024. Word is working to patent the insert and make the innovation available Air Force wide. U.S. Air Force photo by Senior Airman Renee Nicole S.N. Finona.



Capt. Adewale Olajubelo and Ms. Kathy Reid brief Air Force Chief of Staff Gen. David W. Allvin at AFWERX Spark Street during the Air, Space and Cyber Conference at the Gaylord National Resort and Convention Center in National Harbor, Maryland, Sept. 18, 2024. U.S. Air Force photo by Matthew Clouse.

# Spark Street

Spark connects Airmen and Guardian operators to commercial innovators and acquisition processes. The division’s annual Spark Street event gathers Spark Cells at the fall Air, Space and Cyber Conference, where they can show their solutions to warfighter problems to DAF and DOD officials. In FY24, Spark Street consisted of 30 booths highlighting 33 projects from 24 Spark Cells.



# FELLOWSHIPS

The AFWERX Fellowship program is a vital pipeline, connecting service members with the knowledge and networks necessary to drive meaningful change within their missions. This immersive four-month program provides Airmen, Guardians and civilians with hands-on experience in innovation, tackling high-priority challenges in collaboration with industry experts and thought leaders. Participants learn about design thinking, agile acquisition and collaborative tools, building their capacity to become innovation leaders within their units. The fellowship program consists of five cohorts. In FY24, 100 active-duty military, Air National Guard, Air Force Reserve and civilians from every major command participated in the program.

**3**  
COHORTS

WITH **100**

Active-duty military, Air National Guard,  
Air Force Reserve and civilians



**DESIGN THINKING**

**AGILE ACQUISITION**

**COLLABORATIVE TOOLS**



Photo courtesy of Capt Preston Spaulding.

## Grassroots Innovation

Capt. Preston Spaulding, an AFWERX Fellow and Spark coordinator, spearheaded integration of the first Combat Laboratory (CoLab). This deployable mobile manufacturing and innovation facility was designed to empower Airmen and Guardians with on-demand problem-solving capabilities in deployed environments. Through curriculum development, user discovery and market research, Spaulding’s work with CoLab aims to equip innovators with essential skills, foster inter-service collaboration and ultimately enhance deployment capabilities across the Air Force by providing a flexible, innovative solution to downrange challenges. The work is currently being tested with Security Forces, Army Special Forces and intelligence units at Eglin Air Force Base.



# REFINERY

The Refinery acts as an innovation accelerator, fostering grassroots cutting-edge technologies through the Minimum Viable Product (MVP) stage. This six-week program propels solutions from early-stage concepts to operational readiness, ensuring the DAF can rapidly respond to rising challenges with effective, proven solutions. By linking innovators with DOD resources, expertise, tools and funding, Refinery ensures promising solutions are primed for large-scale deployment.

**\$87.2M**

Value of Follow-on Funds

**73**

**NUMBER OF  
AIRMAN AND GUARDIAN  
GRADUATES IN FY24**

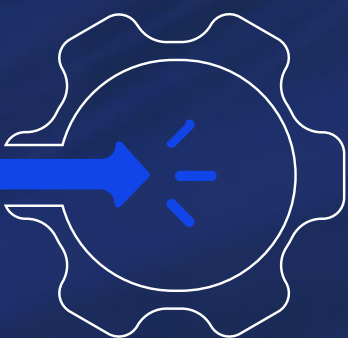
**5**

**NUMBER  
OF COHORTS  
IN FY24**

**NUMBER OF PROJECTS**

**REFINED IN FY24:**

**32**



**4**

**NUMBER OF  
PATENTS  
PENDING**

**2**

**NUMBER OF  
PATENTS  
AWARDED**

ROBINS AIR FORCE BASE, Ga. – Master Sgt. Kristen Leon-Guerrero, left, Air Force Life Cycle Management Center Support Equipment and Vehicles Logistics support manager, Master Sgt. Ronald Michaud, center, 116th Air Control Wing Air Ground Equipment specialist, and Tech. Sgt. Jamie Hubbard, 55th Wing Programs and Resources Flight chief, place DINSTAAR support ramps under a C-17 aircraft ramp for vehicle testing at Robins Air Force Base, Georgia, May 6, 2024. The DINSTAAR ramps decreased the aircraft ramp angle allowing a variety of low clearance aircraft ground support equipment to use the ramp for loading. U.S. Air Force photo by Joseph Mather.

## Grassroots Innovation


Tech. Sgt. Jamie Hubbard, leveraging the AFWERX Refinery “Innovation Accelerator” program, developed DINSTAAR (Danger Is No Stranger To An AGE Ranger), a reusable composite material aircraft support ramp tailored to streamline the loading of low-ground-clearance equipment onto DAF cargo aircraft. Tapping the Refinery’s resources and connections, including a collaboration with AFWERX logistician Jay Breyer, Hubbard’s prototype underwent successful proof-of-concept testing at Robins Air Force Base, Georgia. The testing demonstrated the technology’s potential to replace traditional, less durable plywood ramps on aircraft like the C-17, C-130 and C-5, thereby improving efficiency and sustainability within the DAF’s logistics operations.




## AFWERX & SPACEWERX CHALLENGE PROGRAM

The AFWERX and SpaceWERX Challenge Program serves as an expanded market research and prototyping program intended to rapidly identify and deploy solutions to Air Force and Space Force problems in collaboration with industry and academia. The multi-month Challenge process marshals government, industry and academia, furthering operational readiness within the DAF and the DOD. This process encourages transparency, networking and collaboration at every stage through design-thinking workshops, interactive networking colliders, webinars, transparent crowdsourcing and showcases, ensuring the best possible solution or combination of solutions can be leveraged.

In FY24, the Challenge Program facilitated four Challenge Definition Workshops (CDWS) and six Showcases focused on Expedient Basing, Air-to-Air Refueling, Super Goggle, Tactically Responsive Space, the Digital Spaceport of the Future and Alternative Positioning, Navigation, and Timing. These efforts drew more than 1,000 attendees, resulting in the anticipated award of \$95.9 million towards 69 contracts with selected industry partners. These partnerships and the associated selected solutions led to integration efforts/outcomes between AF Futures, Air Force Materiel Command, Air Mobility Command and Space Systems Command that informed and drove future force design and posture plans.



NEW EMAIL OUTREACH CONTACTS  
**1,880 EMAILS**



AMA WEBINAR ATTENDEES  
**1,699 PARTICIPANTS**

4

CHALLENGE DEFINITION WORKSHOPS

483 PARTICIPANTS

 <p>Super Goggle, sponsored by ACC S&amp;T</p> <div>81 PARTICIPANTS</div>	 <p>Alternate Positioning, Navigation &amp; Timing Sponsored by Space Systems Command</p> <div>128 PARTICIPANTS</div>
 <p>Sustained Space Maneuver, sponsored by USSPACECOM</p> <div>136 PARTICIPANTS</div>	 <p>Digital Spaceport of the Future sponsored by Space Systems Command</p> <div>138 PARTICIPANTS</div>

## FY24 CHALLENGE PROGRAM

6

SHOWCASES

600 PARTICIPANTS

 <p>Expedient Basing Sponsored by Air Force Civil Engineer Center</p> <div>228 PARTICIPANTS</div>	 <p>Air to Air Refueling Mechanism Sponsored by Air Force Research Lab</p> <div>58 PARTICIPANTS</div>
 <p>Super Goggle, sponsored by ACC S&amp;T</p> <div>69 PARTICIPANTS</div>	 <p>Tactically Responsive Space Sponsored by Space Systems Command</p> <div>84 PARTICIPANTS</div>
 <p>Digital Spaceport of the Future sponsored by Space Systems Command</p> <div>69 PARTICIPANTS</div>	 <p>Alternate Positioning, Navigation &amp; Timing Sponsored by Space Systems Command</p> <div>92 PARTICIPANTS</div>

\$95.9M

TOTAL \$ OF AFWERX CHALLENGE COMMERCIAL SOLUTIONS OPENING (CSO) & SPACEWERX SBIR AWARDS

#of

COMMERCIAL SOLUTIONS OFFERING AND SBIR CONTRACTS:

69



Arthur Grijalva, SpaceWERX Director welcomes the Defense Spaceport of the Future cohort during the Challenge Showcase event at the SpaceWERX hub in El Segundo, California, June 10, 2024. SpaceWERX recently announced the launch of its latest I2A cohort, focused on two specific topics: advancing Alternative Positioning, Navigation and Timing, or AltPNT solutions and pioneering the Digital Spaceport of the Future. These initiatives underscore SpaceWERX's commitment to accelerating technological innovations in aerospace operations.



Challenge Showcase attendees discuss project capabilities during the I2A kick off event June 9 and 10, in El Segundo, California.

## Tactically Responsive Space (TacRS) Challenge, A Focused Mission Alignment and Transition Engagement Effort

SpaceWERX's TacRS Challenge, in partnership with SSC/SZA, awarded 18 companies a total of \$30M in early 2024. The TacRS companies began with a Challenge Definition Workshop, which brought key space stakeholders and industry together to collaborate on SpaceWERX specific topic D2P2 solicitations.

SpaceWERX leveraged its pathfinder Orbital Prime Cohort Development Program's (CDP) ecosystem activation, business acumen, and technology acceleration and added a 12-week Innovate to Accelerate (I2A) post award cohort programing to provide additional support through the lifecycle of the Direct to Phase II contracts. In collaboration with the Aerospace Corporation, and based on previous success of the Orbital Prime TRL Bootcamp, the TRL Bootcamp was extended to four TacRS cohort companies.

SpaceWERX's model of flexible funding bridges, Cohort Development assessment and engagement, kickstart of I2A activities, and TRL Bootcamp provides end to end support from challenge definition to operational capability. The TacRS cohort benefited from SZA's operational mission pathways and mentorship. This team collaboration helped to successfully de-risk technologies for both government adoption and commercial scale-up, demonstrating the power of coordinated acquisition innovation, creating sustainable space industrial capacity.





More than 100 Airmen, Guardians and DOD attendees gathered at the AFWERX Spark Western Crossflow event in Spokane, Washington, from April 23 to April 25, 2024. Crossflows annually bring together Spark Cells from around the world with innovation partners from the Department of Defense to upskill our innovation network, share lessons learned, and cultivate the powerful Spark culture. U.S. Air Force photo by Kacey Napier.

## VISION

The VISION platform plays a key role in enhancing collaboration among Spark Cell teams across the DAF.

**It enables teams to share projects, avoid redundant efforts, and discover innovations from other units.**

One notable example is the Virtual In-Processing (VIP) application developed by the Travis AFB Phoenix Spark Cell. This web-based tool simplifies the unit in-processing procedure, offering transparency and assistance to users. Through VISION, VIP became accessible to other units within the DAF, spanning three major commands (MAJCOMs). This widespread adoption accelerated collaboration and minimized duplicated efforts.

The Squadron Innovation Fund (SIF) Marketplace, VISION's integrated crowd-funding module, further empowered this collaboration by allowing units to pool their innovation resources. This streamlined the development, scaling, and deployment of VIP across multiple squadrons, maximizing efficiency and innovation funding.



# PROJECT ARC

Project Arc embeds innovation directly within operational units, ensuring that technological advancements are rapidly tested, refined and integrated into mission-critical environments. This initiative places scientists, engineers and technologists in operational units for six-month rotations, where they directly engage with Airmen and Guardians to address specialized technical challenges and meet the demands of near-peer competition while ensuring mission operations remain uninterrupted.

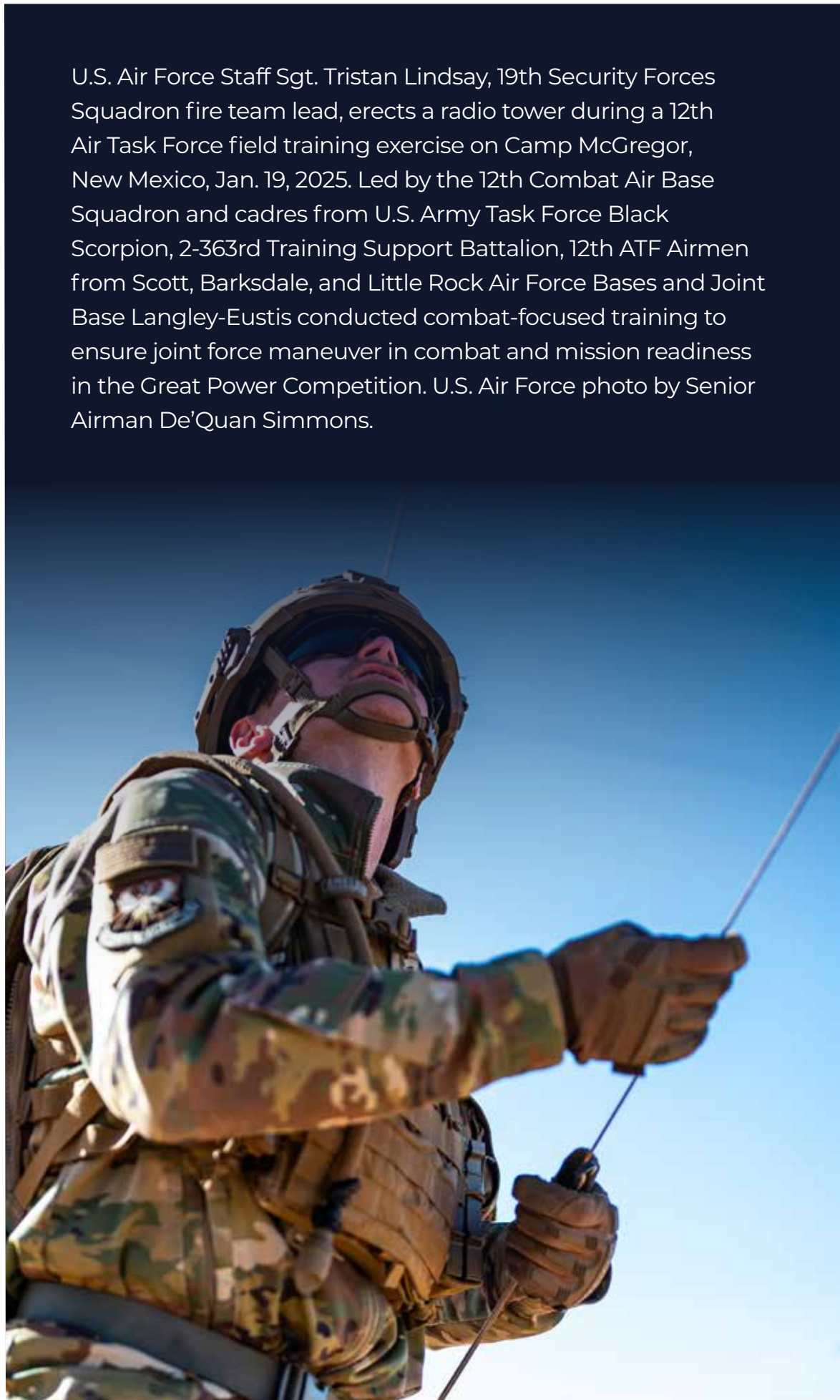


## Technical Expertise

In FY24, Project Arc embedded technical experts with the 12th Air Task Force at Scott AFB to improve Agile Combat Employment through mobile laser communications, readiness dashboards and autonomous rovers. Expanding to three of six ATFs will help determine the best support method for future Deployable Combat Wings with uniformed scientists and engineers.



12th Air Task Force Airmen load onto a C-130H Hercules assigned to the Delaware Air National Guard, following their completion of predeployment training, at Tyndall Air Force Base, Florida, Nov. 20, 2024. Bringing together Airmen from Scott, Barksdale and Little Rock AFB for the first time, the 12th ATF trains a combat unit of action in preparation for deployment, strengthening U.S. joint force readiness in the Great Power Competition. U.S. Air Force photo by 2nd Lt. Lyca Steelman.



U.S. Air Force Staff Sgt. Tristan Lindsay, 19th Security Forces Squadron fire team lead, erects a radio tower during a 12th Air Task Force field training exercise on Camp McGregor, New Mexico, Jan. 19, 2025. Led by the 12th Combat Air Base Squadron and cadres from U.S. Army Task Force Black Scorpion, 2-363rd Training Support Battalion, 12th ATF Airmen from Scott, Barksdale, and Little Rock Air Force Bases and Joint Base Langley-Eustis conducted combat-focused training to ensure joint force maneuver in combat and mission readiness in the Great Power Competition. U.S. Air Force photo by Senior Airman De'Quan Simmons.

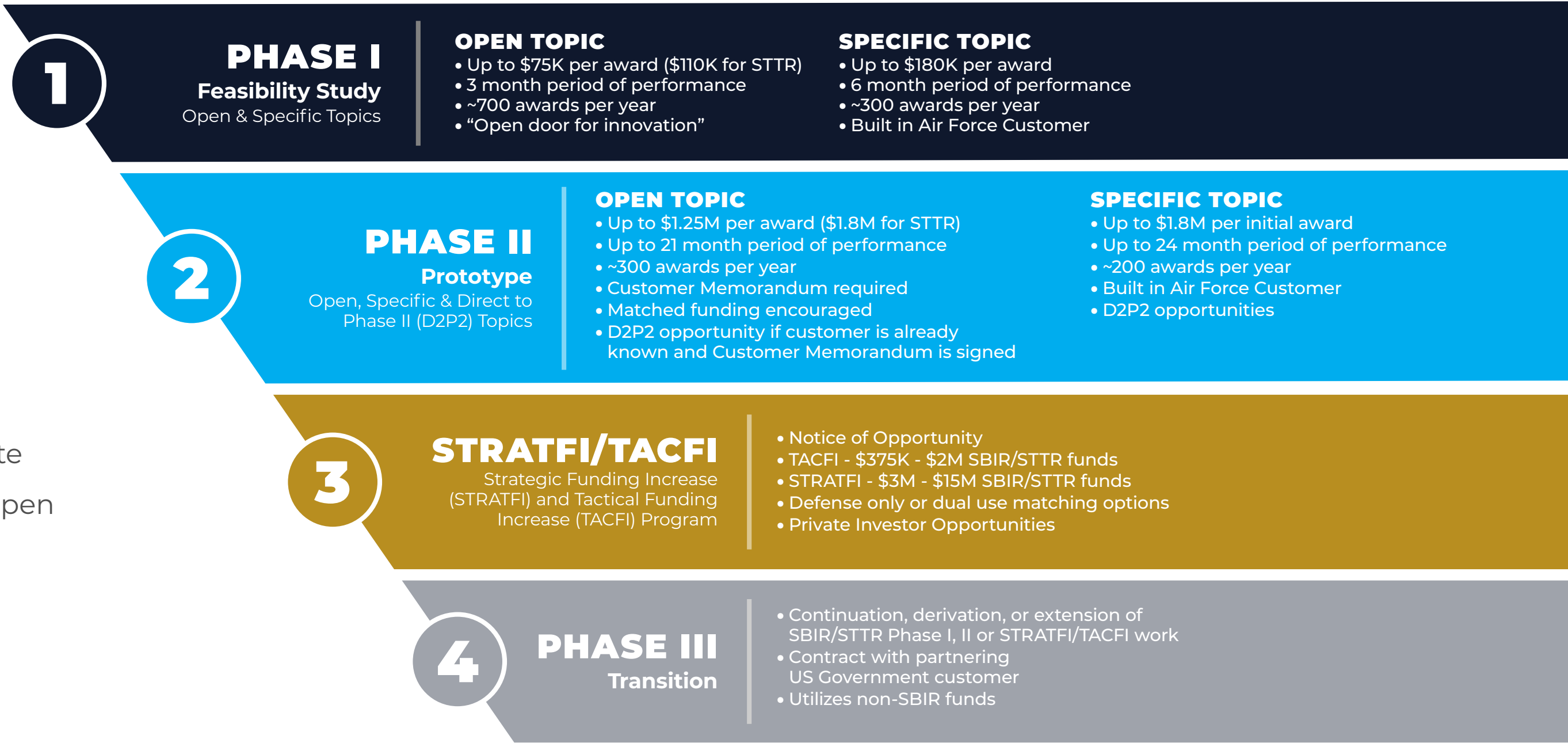




# VENTURES PATHWAY

**Fueling Innovation**  
**Through Strategic SBIR & STTR Investment**

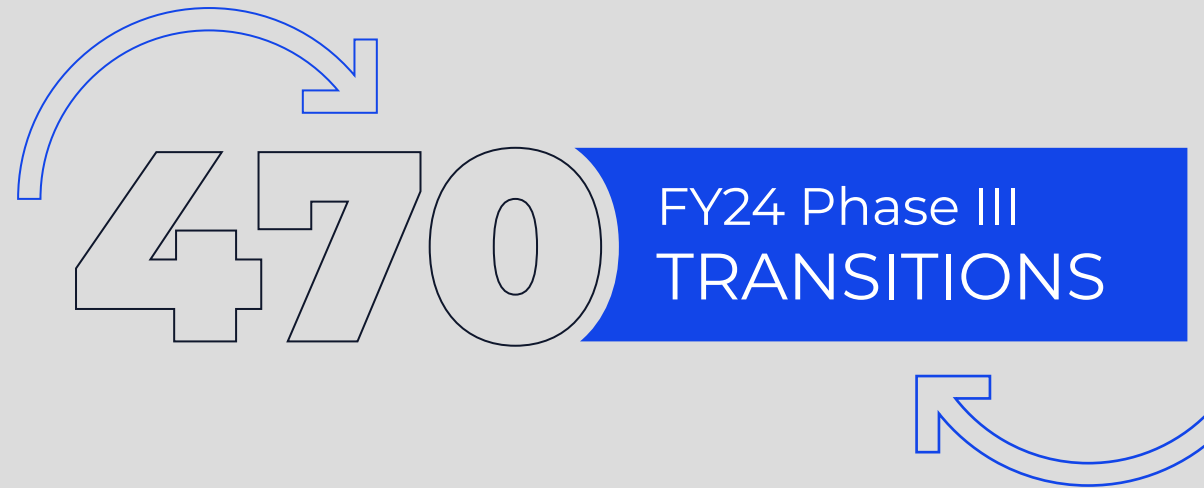
**VENTURES** fuels the development of groundbreaking air and space capabilities by strategically investing in small businesses and startups with disruptive military or dual-use technologies. As the DAF’s sole administrator of its \$1.5 billion SBIR and STTR programs, Ventures grows the nation’s defense innovation base, expanding access to defense funding and connecting the DAF with a diverse range of commercial technologies. Ventures focuses on attracting and scaling small businesses via government and private capital, ensuring that promising innovations reach the warfighter and contribute to national security. The Ventures portfolio is strategically divided into three components: Open Topic, Specific Topic and Growth Stage Investment (STRATFI/TACFI).





Overall Ventures Impact:

Since the launch of AFWERX and SpaceWERX, Ventures has significantly expanded the DAF’s small business portfolio, adding 2,655 new companies and accelerating the rate at which new companies are brought into the defense ecosystem. This has resulted in 1,854 small business technologies transitioning to a Phase III contract with a DAF or other government customer from FY2019 to FY2024, representing nearly \$7.5 billion in contracts. Furthermore, Ventures has facilitated the attraction of significant private investment into its portfolio companies, totaling more than \$32 billion since AFWERX inception. This leveraged private capital is crucial for scaling promising technologies and ensuring their long-term viability.



Vinny Pande, left, SpaceWERX Ventures Materiel Leader, moderates the “OI-1 Space: Breaking Business Models for Breakaway Innovation” panel at South by Southwest in Austin, Texas, March 8, 2024. The panel featured speakers Jared Evans, Office of Strategic Capital Director of Transition Acceleration Program Office of Strategic Capital, Arthur Grijalva, SpaceWERX Director, and Dr. Tim Grayson, Special Assistant to the Secretary of the Air Force for Mission Centered Analysis and Operational Imperatives. U.S. Air Force photo by Matthew Clouse.



# Open Topic

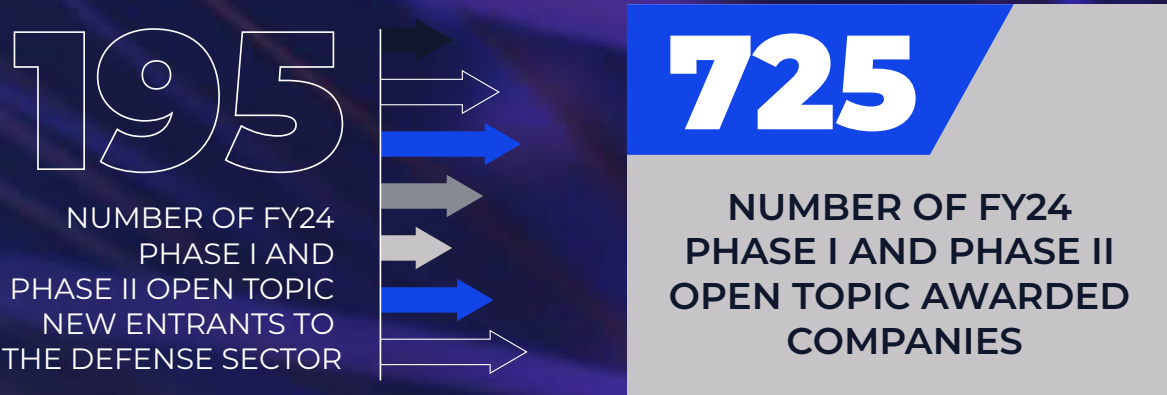
Open Topic, a cornerstone of the Ventures pathway, expands access to defense funding, encouraging participation from the broader commercial technology ecosystem and non-traditional players. Under the Open Topic program, AFWERX issues a general call for ideas, opening the door for small businesses and researchers to offer new and unexpected solutions to warfighter problems. This program uses SBIR and Small Business Technology Transfer (STTR) funds to invest in small businesses and startups with innovative technologies that may have dual-use potential, even if they haven't traditionally worked with the DOD. By providing an "open door for innovation," AFWERX expands the pool of potential solutions to national security challenges.

In FY24, Ventures awarded nearly \$586.3 million in Phase I and II Open Topic contracts for Air Force and Space Force technologies. The top technologies funded included areas

such as UAS geolocation detection, AI enabled object tracking, ISR exploitation and processing, Resilient PNT and Data Transport, Adaptive Distributed C2, Digital Twin and Cyber.

The Open Topic approach has expanded the range of technologies AFWERX, SpaceWERX and the DAF can fund while also helping to field them more rapidly. For example, in August 2021, Varda Space Industries, a startup focused on in-space manufacturing, received its first SBIR contract to investigate the use of its space reentry capsule for hypersonic research. In November 2024, the El Segundo, California-based company announced it had landed a Phase III contract with the Air Force Research Laboratories (AFRL) worth up to \$48.8 million. The contract provides for further development and use of Varda's reentry capsules for hypersonic payload testing. Data captured under the contract will help refine future hypersonic vehicle technology.

## FY24 OPEN TOPIC BY THE NUMBERS





# Streamlining Open Topic

In FY24, a cross-divisional AFWERX team significantly streamlined the Open Topic program, addressing such critical areas as solicitation schedules, automation needs and process enhancements. Key outcomes included:

## ADJUSTED SOLICITATION SCHEDULE:

A revised schedule with three set solicitations for FY25, providing more flexibility to support emerging DAF needs and aligning with the DOD's annual schedule.

## SUPPORT FOR URGENT NEEDS:

Leveraging the new FY25 DOD SBIR/STTR schedule with monthly topic pre-releases to address urgent government customer needs.

## ONGOING PROCESS IMPROVEMENTS:

Building on previous enhancements, such as the Customer Memorandum Agreement, automated deliverables tracking, and Salesforce integration, to further streamline the Open Topic process.

These improvements strengthen AFWERX's ability to rapidly connect with small businesses and accelerate the acquisition of innovative technologies for the warfighter. Since its inception in FY19, the Open Topic program has awarded over 6,400 contracts worth \$3.76 billion to small businesses, demonstrating its significant impact on the defense innovation base. The program remains a vital pathway for accessing a diverse range of dual-use technologies and fostering a robust defense innovation base.



Teams from across AFWERX met in person for a process improvement off-site event to focus on making critical changes to the Open Topic program in Dayton, Ohio, June 25-26, 2024. The two-day exercise incorporated AFWERX cross-divisional teams to address the solicitation schedule, automation needs and additional requirements. U.S. Air Force photo by Lt. Col. Carrie Kessler.



# Specific Topic

Specific Topic leverages SBIR/STTR funding to address specific Air Force and Space Force needs by soliciting tailored solutions from the commercial tech ecosystem. This focused approach ensures that SBIR/STTR investments directly align with critical operational challenges and accelerate the development of targeted capabilities. With built-in Air Force and Space Force customers, Specific Topic investments have a clear pathway to transition.

## FY24 SPECIFIC TOPIC BY THE NUMBERS

FY24 PHASE I AND PHASE II  
SPECIFIC TOPIC AWARDS VALUE:

\$517.6M

11% PHASE I • 89% PHASE II

NUMBER OF FY24  
PHASE I AND PHASE II  
SPECIFIC TOPIC NEW  
ENTRANTS TO THE  
**DEFENSE  
SECTOR**

38

371

NUMBER OF FY24 PHASE I AND PHASE II  
SPECIFIC TOPIC AWARDED COMPANIES



588

NUMBER OF FY24  
PHASE I AND PHASE II  
SPECIFIC TOPIC AWARDS

295

Number of FY24 Phase II  
**SPECIFIC TOPIC AWARDS**



FY24 PHASE II SPECIFIC  
TOPIC AWARDS VALUE

\$464.8M

### FOR BAA SPECIFIC TOPICS

The number of days to award varies greatly depending on the DAF organization who owns the topic. Broad Agency Announcement (BAA) Specific Topic awards are as fast as 49 days but are typically within the SBA directed window for awards.

BAA Specific Topics are balanced using a top-down approach through TD's SPO's and other organizations requirements. These requirements are aligned with POM of funds and represent ONLY DAF priorities. The breadth of the topics is well balanced across more than 15 critical technology areas.







## Process Improvements

The Growth Stage Investment (STRATFI/TACFI) program implemented new tools and streamlined processes, reducing the notification timeline by more than 50 percent and increasing efficiency. The requirement for a government champion to submit STRATFI applications strengthened collaboration and ensured alignment with DAF priorities.

## Expanding Opportunities

SpaceWERX also announced a supplemental cohort of 9 STRATFI selections, further expanding support for promising space technologies and demonstrating the program’s continued growth.

The Growth Stage Investment (STRATFI/TACFI) program’s strategic investments and process improvements are not just about numbers; they’re also about empowering the innovators who are developing the technologies that will protect our nation and give our warfighters the decisive edge they need.



149 FW taps into STRATFI program to scale additive manufacturing capabilities. Master Sgt. Carlos Gil, 149th Maintenance Squadron aircraft metals technician, uses a forklift to move a newly delivered printer Aug. 12, 2020 at Joint Base San Antonio-Lackland, Texas. Air National Guard photo by Mindy Bloem.



**PRIME** accelerates the development and adoption of critical dual-use technologies by strategically partnering with commercial companies. By leveraging Department of Defense (DOD) resources, such as test infrastructure and operational use cases, Prime de-risks emerging markets and ensures that the DAF benefits from the latest advancements in the commercial sector. Prime focuses on “priming” nascent markets by incorporating military interests, creating a win-win for both commercial companies and national security.

# PRIME PATHWAY

## Orbital Prime

### Transforming Space Mobility to Advance Logistics Capabilities

Launched in 2022 as the first space Prime program, Orbital Prime focused on accelerating the In-space Servicing, Assembly and Manufacturing (ISAM) market. It aimed to seed advanced technology in key ISAM areas and create favorable market conditions for a commercial ISAM marketplace. A mature ISAM ecosystem will enable a transformational space mobility capability, which will allow the U.S. to pivot its architectural design decisions to incorporate new in-space logistics capabilities, such as refueling, assembly and non-cooperative transportation.

**Accelerating  
Emerging Markets for  
Dual-Use Technologies**







Image courtesy of TURIONSPACE.

## Autonomous Spacecraft Docking and Maneuvering

After initial design challenges with their gecko gripper end effector on their Orbital Prime STTR contract, Turion Space successfully demonstrated a working prototype of its capture mechanism design. In July, Turion, based in Irvine, California, announced it had received a \$1.9 million TACFI award from SpaceWERX to continue developing an autonomous spacecraft docking and maneuvering system. The contract aims to advance technologies for engaging uncooperative space objects and facilitating the deorbit of inactive satellites.

In January, Space Force awarded the company a \$32.6 million firm-fixed-price contract for multi-payload satellites and real-time command and control. The contract calls for demonstrations of a rapid build of three satellites with rendezvous proximity operations and high-resolution satellite-to-satellite imagery collection capabilities. Turion is expected to complete the work by Oct. 31, 2028.

## Software, Hardware to Simulate Space Operations

In a demonstration performed on its Orbital Prime contract, Quidient LLC collaborated with another Orbital Prime company, Arkisys, to test their Rendezvous and Proximity Operations Reconstruction Tool (RePORT-4100) prototype system. Using a robot arm in an Arkisys lab, Quidient demonstrated the capability to scan an orbital separation ring used for docking operations and generate a 3D model of the separation ring. Quidient is delivering the RePORT-4100 software and accompanying hardware to Air Force Research Laboratory's Space Vehicles Directorate (AFRL/RV) for continued testing. The directorate has plans to train, test, and use the RePORT-4100 software with other data sets, both actual or simulated in-space data. Additionally, AFRL will apply the items in an inspection mission using a UAV drone and will investigate image capture of a moving object from a fixed camera.



Image courtesy of QUIDIENT LLC.

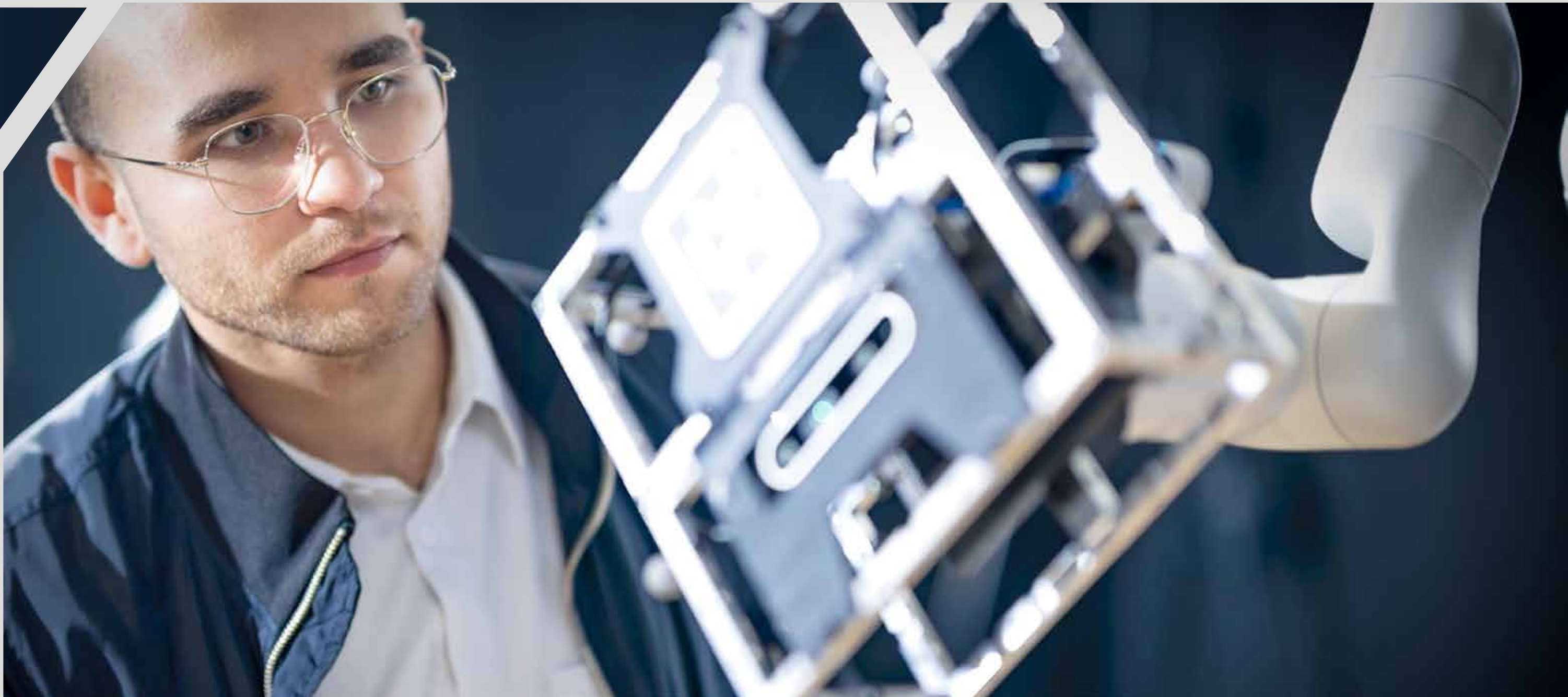


# TRL Bootcamp

In April 2024, SpaceWERX and The Aerospace Corporation launched the Technology Readiness Level (TRL) Bootcamp to accelerate technology maturation for select Phase II contractors. The program offers two tiers: a three- to four-month intensive bootcamp with on-site engagement or a “Phone-a-Friend” on-demand expert access version. Selection is based on funding, capacity, and SpaceWERX recommendations. In 2024, the program supported the Orbital Prime (seven companies) and TacRS Challenge (four companies) cohorts. Participation is voluntary for selected companies and part of SpaceWERX’s Commercial Development Program.



TRL Bootcamp enables small business and startup companies to align their technologies with critical government needs, identify promising, emerging commercial technology and facilitate its integration into U.S. government missions. Images Courtesy The Aerospace Corporation.





### Transforming Vertical Flight for Defense Use

Agility Prime, established in 2019, has helped propel the development of the domestic vertical flight market and electric vertical takeoff and landing (eVTOL) aircraft, also known as Advanced Air Mobility (AAM). In FY24, the program focused on evaluating next-generation aircraft for Air Force applications, refining operational use cases, and maturing key partnerships. To date, Agility Prime has awarded more than 60 contracts totaling more than \$390 million to small business partners, fueling innovation in eVTOL and hybrid-electric aircraft, as well as supporting technologies.

**These efforts have also contributed to more than \$14 billion in private-sector commercial investment in the emerging AAM industry.**

AFWERX Prime teamed with multiple vertical lift aircraft manufacturers to conduct aircraft testing at U.S. airbases and flight test facilities for consideration for Agile Combat Employment (ACE) capabilities. In FY 24, multiple firms progressed in delivering and testing next-generation aircraft that promise enhanced operational flexibility, cost-efficiency and sustainability for military uses. Because of the work AFWERX has done with Agility Prime, there are numerous US-built, mature, commercial options available for eVTOL aircraft that can quickly enable a USSOCOM or Joint Force program to acquire for future missions.



Participants operate AFWERX Agility Prime partner Joby's flight simulator during the 2024 National Advanced Air Mobility Industry Forum at Springfield-Beckley Municipal Airport, Ohio, Aug. 21, 2024. Other Agility Prime partners included Beta Technologies and Pivotal. U.S. Air Force photo by Dennis Stewart.





Pivotal's BlackFly electric vertical take-off and landing, or eVTOL, aircraft in a hangar at Springfield-Beckley Airport, Ohio, June 17, 2024. AFWERX, the Department of the Air Force's innovation arm and a directorate within the Air Force Research Laboratory, showcased their eVTOL aircraft partner, Pivotal, in collaboration with Beavercreek, Ohio-based defense contractor Modern Technology Solutions Inc. U.S. Air Force photo by Dennis Stewart.

## Continued Testing for Military Application

AFWERX continued testing and experimentation to inform potential operational use cases with Joby Aviation and the 412th Test Wing at Edwards Air Force Base, California. Also in FY24, Archer Aviation's Midnight eVTOL received military airworthiness assessment approval from the DOD and was delivered for testing under its Agility Prime contract, valued at up to \$142 million. The Midnight aircraft is being evaluated for medical evacuation; cargo transport; and intelligence, surveillance, and reconnaissance (ISR) missions. Archer is collaborating with the DAF at its flight test facility in Salinas, California, to assess the aircraft's military capabilities.

Additionally, AFWERX partnered with Modern Technology Solutions Inc. (MTSI), to evaluate Pivotal's BlackFly eVTOL aircraft at Springfield-Beckley Airport in Springfield, Ohio. The testing focused on logistics, emergency response and ISR applications. The program also explored infrastructure needs, including electric charging solutions such as the DANNAR battery energy storage system, to ensure seamless compatibility with DOD operations. AFWERX also assessed the Pyka Pelican Cargo aircraft to explore its potential for defense logistics and remote deployment.

Building on eVTOL testing insights from FY24, AFWERX is transitioning to focus on hybrid-electric aircraft to enhance military logistics and operational flexibility, aligning with Agile Combat Employment strategies.



## Hybrid Powered Aircraft, Electra

Electra, a Manassas, Virginia-based aerospace firm, has developed hybrid-electric Ultra Short Takeoff and Landing (eSTOL) aircraft with support from AFWERX Agility Prime and Ventures. In September FY24, the company successfully showcased its EL2 Goldfinch, a two-seater prototype, for AFWERX and other military stakeholders. The demonstrations at Marine Corps Air Facility Quantico and Felker Army Airfield at Joint Base Langley-Eustis, both in Virginia, highlighted the aircraft’s dual-use capabilities for logistics operations in austere environments. The flights included takeoffs and landings from grass fields, showcasing operations off-runway without the need for ground-support infrastructure. The pilot also displayed the aircraft’s low-altitude, low-speed maneuverability, further emphasizing its survivability in complex military scenarios.



Electra, an aerospace company that develops electric air taxis, conducts a live demonstration of the new Ultra Short hybrid aircraft at Marine Corps Air Facility Quantico, Marine Corps Base Quantico, VA, on June 28, 2024. Electra’s Ultra Short aircraft has the unique ability to take off and land in short distances with the aircraft offering over 600 kW of power to provide an energy advantage on using less fuel. Electra’s mission is to build aircraft to help decarbonize aviation and to make regional air mobility more accessible. U.S. Marine Corps photo by Sgt. Miranda C. DeKorte.



## BETA Technologies Electric Aircraft Joins Military Exercises

In FY24, BETA Technologies, an Agility Prime partner, put its ALIA electric aircraft to work in military exercises, testing Air Force use cases to benefit the warfighter. AFWERX first partnered with BETA Technologies in December 2019 and has since awarded the company multiple contracts, supporting the development and testing of its aircraft for potential military applications.

In January 2024, BETA's ALIA aircraft took part in a casualty evacuation exercise at Eglin Air Force Base, Florida. The exercise involved a coordinated operation in which an HH-60W Jolly Green II helicopter from the 41st Rescue Squadron transported a simulated casualty from Moody Air Force Base, Georgia, to Eglin. The casualty was then switched to the ALIA aircraft and flown to Duke Field.

In February, BETA participated in the Vermont Air National Guard's 158th Fighter Wing led Exercise Maple Thunder, a multistate Agile Combat Employment (ACE) initiative.

The ALIA aircraft completed 16 sorties over five days, demonstrating its operational readiness in tactical resupply, simulated casualty evacuation and equipment delivery.

In June 2024, the ALIA took part in the Contingency Location Operations Rehearsal (CLOR) 2024, an Air Combat Command's Agile Battle Laboratory (ABL) exercise focused on enhancing ACE capabilities and evaluating 17 emerging technologies.

The ALIA completed more than 24 flight hours, transporting 500 pounds of cargo per sortie in missions like tactical resupply and simulated medical evacuations.

The BETA Technologies team carries a simulated casualty into their aircraft at Eglin Air Force Base, Florida Jan. 11, 2024. The two aircraft and crews participated in a casualty evacuation exercise with the HH-60 dropping off and the ALIA, a conventional takeoff & landing, all-electric aircraft, picking up the simulated patient for higher-level care. U.S. Air Force photo by Samuel King Jr.





# Autonomy Prime

## Revolutionizing Logistics and Enhancing Warfighter Capabilities

Autonomy Prime is accelerating the development and adoption of autonomous/automated capabilities, with a focus on small unmanned aerial systems (sUAS) and alternative positioning, navigation, and timing (PNT).

**In FY24,  
Autonomy Prime achieved  
significant milestones,  
demonstrating the transformative  
potential of autonomous  
technologies for the warfighter:**

## AI and Autonomy Proving Ground, ADAX and Near Earth Autonomy

The Autonomy, Data and AI Experimentation (ADAX) Proving Ground at Eglin Air Force Base, Florida, hosted its first autonomy developer test in early FY24. Near Earth Autonomy, a Pittsburgh-based company, tested its autonomy hardware and programs using a Griff 135 UAS. During the tests, the company demonstrated its autonomous object detection, landing, and a new avionics architecture that enhances system reliability and accreditation readiness. As a joint venture between the Chief Digital and Artificial Intelligence Office, AFWERX, and the 96th Test Wings, ADAX streamlines autonomy testing by cutting execution timelines to as little as six weeks. ADAX continued UAS autonomy and AI test projects throughout the year.



An 8-foot Griff 135 unmanned aerial system lifts off from the Eglin Air Force Base, Florida range Oct. 26. The aircraft was part of autonomy testing facilitated by the Autonomy, Data and AI Experimentation proving ground, a new organization at Eglin. U.S. Air Force photo/Samuel King Jr.



Craig Milliard, Joby flight test lead, gives a demonstration to Col. Kevin Hicok, 20th Fighter Wing commander, about their autonomous flight capabilities in the Joby ground control station during AGILE FLAG 24-3 at Mojave Air and Space Port, Calif., Aug. 5, 2024. AFWERX Autonomy Prime invited Joby to conduct autonomous flight demonstrations during AGILE FLAG and show Air Force leaders how autonomous aviation can contribute to the Agile Combat Employment, or ACE, concept. ACE is a proactive and reactive operational scheme of maneuver executed within threat timelines to increase survivability while generating combat power. U.S. Air Force photos by Matthew Clouse.



## Enhancing Operational Efficiency | Joby Aviation, Reliable Robotics and Xwing

The autonomous logistics missions during FY24 AGILE FLAG exercises showed the potential to increase sortie-generation rates and cut maintenance delays by ensuring prompt delivery of crucial aircraft parts to warfighters in the field. This capability is especially critical in contested environments fraught with logistics disruptions. The annual AGILE FLAG exercise validates the Air Force's ability to execute Agile Combat Employment (ACE). This concept emphasizes the ability to quickly disperse, deploy, and operate from various locations. Furthermore, the exercise seeks to verify a wing's ability to deploy, employ, and sustain forces, and to execute essential mission tasks in challenging, operationally limited scenarios. It also serves as a certification process for Air Combat Command's (ACC) Expeditionary Air Base Force Elements, ensuring their readiness before deployments.

During AGILE FLAG 24-1, Xwing, a firm later acquired by Joby Aviation, and Reliable Robotics made history by flying autonomous logistics missions at McClellan Airfield, Sacramento, California in January 2024. Xwing completed the first-ever autonomous cargo flight during the exercise, transporting equipment between bases. Additionally, aircraft outfitted with the Xwing technology flew more than 2,800 autonomous flight miles. In August, during AGILE FLAG 24-3, Joby and Reliable Robotics flew 47 autonomous logistics missions at Mojave Air and Space Port, California. Aircraft using their technology covered more than 6,600 miles and delivered critical cargo such as aircraft parts to maintainers. These missions showed the ability of autonomous aircraft to enhance logistics efficiency and reduce reliance on traditional cargo aircraft, freeing them up for more critical tasks.





## Accelerating JADC2 Innovation Through Collaboration

Integration Prime focused on finding and leveraging commercial technologies to manage and integrate Air Force and Combined Forces mission threads, specifically for the Joint All-Domain Command and Control (JADC2) domain.

**In FY24, Integration Prime achieved significant milestones, demonstrating the power of collaboration and rapid innovation.**

As part of a strategic realignment to address critical DOD gaps and align with evolving DAF priorities, the Integration Prime program closed at the end of FY24. This decision reflects the dynamic nature of the AFWERX portfolio and its ability to adapt to emerging challenges and technologies.

## Collaboration and Innovation BRAVO 101 Hackathon

Integration Prime facilitated collaboration and spurred innovation during the U.S. European Command's BRAVO 101 Hackathon in Stuttgart, Germany. The event, held in June 2024, brought together more than 250 data scientists, coders, and developers to rapidly prototype solutions using real DOD data. Integration Prime provided mentorship, resources, and a collaborative framework, enabling participants to effectively tackle JADC2 challenges. The hackathon resulted in practical outcomes with direct applications to military operations. One notable achievement was the development and testing of an advanced “scoff trust” zero-trust method, allowing for secure deployment of untrusted software or AI algorithms without the need for code scanning. Additionally, Hackathon participants also sought ways to improve outcomes during the critical first hour after someone sustains a traumatic injury, often called the “golden hour,” in a medical evacuation scenario. They explored using large language models to gather and analyze data, enabling faster and more informed decisions.



More than 250 data scientists, coders and developers referred to as “hackers,” gathered to develop prototypes within set timeframes to initiate and validate innovative concepts in Stuttgart Germany, June 7, 2024. BRAVO Hackathons, sponsored by senior Department of Defense leaders, foster innovative environments where government and industry collaborate to test bold ideas using real DOD data. U.S. Army photo by Staff Sgt. Aaron Daugherty.



# PART THREE: **TRANSITIONS**



# PART THREE: TRANSITIONS

AFWERX and SpaceWERX exist to build the innovation base for our nation's defense. We are a discovery organization, and we define success based on our ability to cultivate and transition impactful emerging technologies to deter and win wars. We measure that success based on the maturity and viability of an innovation or capability's ability to scale to support DAF operational needs.



U.S. Air Force photo by Airman 1st Class Jared Lovett.

This section showcases the culmination of our efforts: the successful transition of cutting-edge technologies into the hands of our Airmen and Guardians in FY24. These transitions represent the tangible impact of our work, demonstrating how we leverage American ingenuity to strengthen national security. By bridging the gap between the defense and private sectors, we accelerate the journey from concept to fielded capability, ensuring that our warfighters have the decisive edge they need in an increasingly complex battlespace.



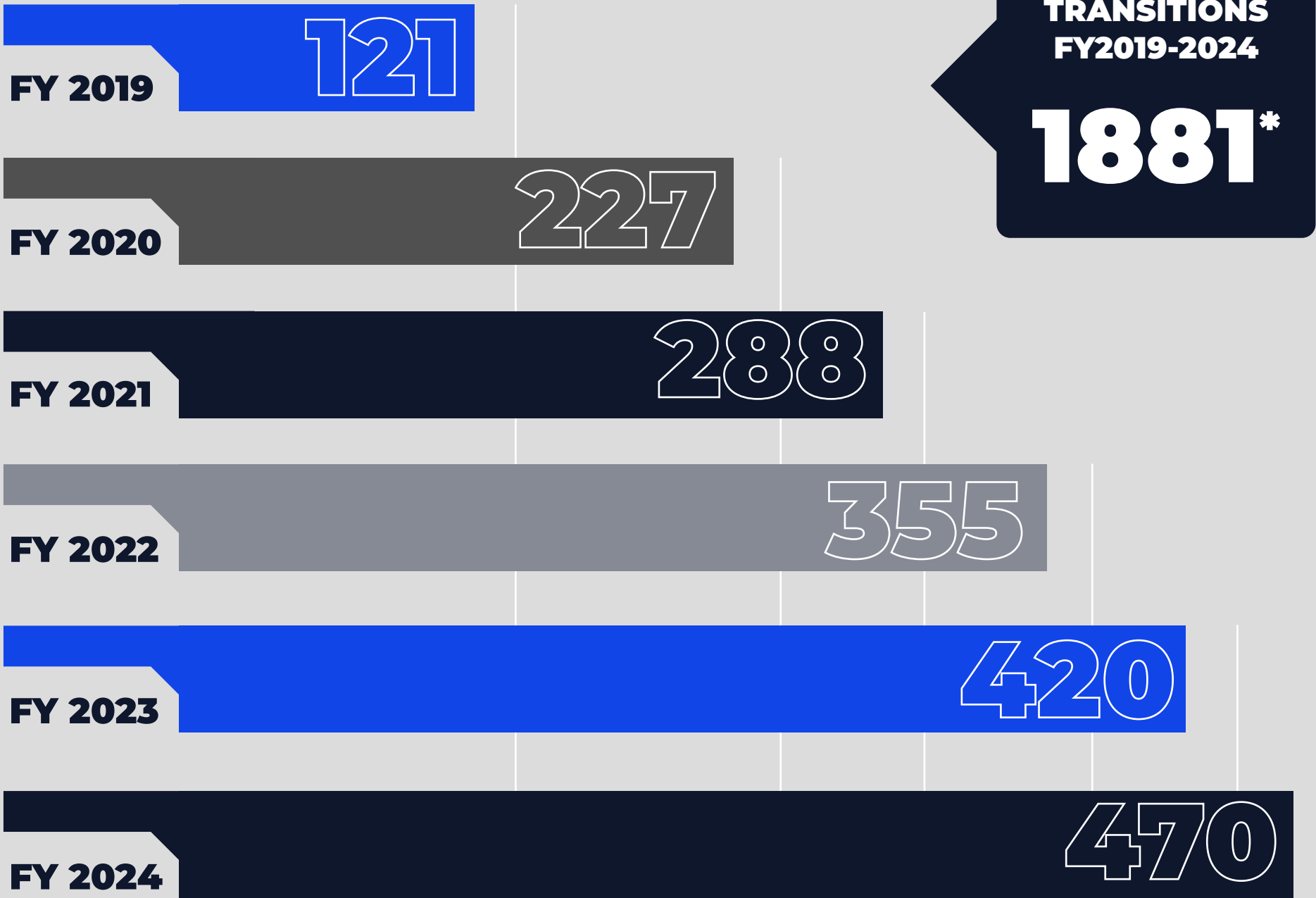
AFWERX and SpaceWERX act as “sherpas,” guiding innovations through the complexities of the DAF and overcoming bureaucratic barriers to ensure that promising technologies reach their full potential. We harness the collective power of our programs – Ventures, Spark and Prime – to identify, nurture and ultimately transition solutions that address the DAF’s most pressing challenges.

**PHASE III:  
MILESTONE  
FOR SUCCESS**

A Phase III SBIR transition is a clear sign of success—when a technology moves beyond prototypes into real-world use.

It means a solution has earned adoption by the DoD, proving its value and scalability where it matters most.

**PHASE III  
TRANSITIONS**



\*Data pulled from the Federal Procurement Data System.



# Transforming Space Mobility to Advance Logistics Capabilities

Starfish Space, with support from SpaceWERX, has developed a revolutionary space vehicle designed to service or remove satellites from orbit. The Tukwila, Washington-based aerospace firm’s Otter spacecraft, combined with its advanced software and docking device, enables satellite maneuverability, lifespan extension, and debris mitigation.

Since 2021, AFWERX has awarded Starfish Space 14 SBIR contracts and one STTR contract, demonstrating the DAF’s commitment to innovative technologies. These contracts have supported the development of Starfish’s Otter spacecraft and its various components, including the Cetacean computer vision navigation software and the Nautilus docking device.

The DAF benefits significantly from Starfish Space’s technology, which enhances satellite-servicing capabilities, improves satellite maneuverability and resilience, and advances space-sustainability efforts. This aligns with the DAF’s goals of maintaining a technological advantage in space and ensuring the long-term viability of space operations.

Looking ahead, Starfish Space is advancing its technology and operational capabilities, securing significant contracts with the Space Force and NASA. A \$37.5 million STRATFI contract will deploy the Otter spacecraft in geostationary orbit by 2026, while a \$15 million NASA contract will utilize Otter for a debris inspection mission.

In May 2024, Space Systems Command (SSC) in partnership with SpaceWERX awarded Starfish Space a \$37.5 million STRATFI contract. That agreement calls for Starfish to build, launch and operate an Otter satellite vehicle designed to conduct a docking mission to provide “augmented maneuver” capability for national security space assets. The effort is part of a strategic collaboration that also includes Space Safari, SSC’s Commercial Space Office as well as its Assured Access to Space organization.

With private funding exceeding \$50 million, Starfish Space is poised to launch its first three Otter servicing vehicles in 2026, providing critical services to client satellites for Intelsat, Space Force, and NASA. The DAF’s partnership with Starfish Space is a key step towards maintaining its superiority in space and addressing the challenges of space resilience.

**Starfish Space, with support from SpaceWERX, has developed a revolutionary space vehicle designed to service or remove satellites from orbit.**

The Tukwila, Washington-based aerospace firm’s Otter spacecraft, combined with its advanced software and docking device, enables satellite maneuverability, lifespan extension, and debris mitigation. Courtesy of Starfish Space.





## Rapid eVTOL Deployment, Agile Logistics

The development of electric vertical takeoff and landing, or eVTOL, vehicles has required significant advancements in various technologies, including powertrains, batteries, and navigation software. AFWERX has played a crucial role in supporting the development of these technologies through funding, testing, and certification. One company that has benefited from AFWERX's support is Archer Aviation, a California-based manufacturer of eVTOL aircraft.

Archer's Midnight eVTOL features a unique "12-tilt-six" configuration, with 12 propellers fixed to six booms attached to fixed wings. The aircraft is powered by six independent lithium-ion battery packs, which eliminates emissions during flight and simplifies the engine's design. This configuration also allows the aircraft to safely complete a flight even if one engine or battery pack fails.

In 2021, Archer received two STTR contracts totaling \$298,221 to investigate precision landing and localization systems and to research and develop innovative propulsion system arrangements. In 2022, Archer received a STTR Phase II contract for \$744,796 to refine its vision-based navigation concept and conduct flight tests.

In 2023, AFWERX awarded Archer a \$32 million Strategic Funding Increase contract to develop a mobile flight simulator and conduct government-directed flight tests. Archer has also delivered a Midnight eVTOL to the DAF under its contract with Agility Prime, which will be used for experimental testing and evaluation. The company plans to pursue additional defense work, including a strategic partnership with Anduril to develop a hybrid VTOL aircraft for critical defense applications.

The partnership between AFWERX and Archer demonstrates the importance of collaboration between the public and private sectors in advancing innovative technologies. AFWERX's support has enabled Archer to accelerate the development of its eVTOL technology, which has the potential to transform military logistics and operations. The delivery of the Midnight eVTOL to the DAF marks a significant milestone in the transition of eVTOL technology from the private sector to military use.

**AFWERX has awarded Archer several contracts to support the development of its eVTOL technology.**

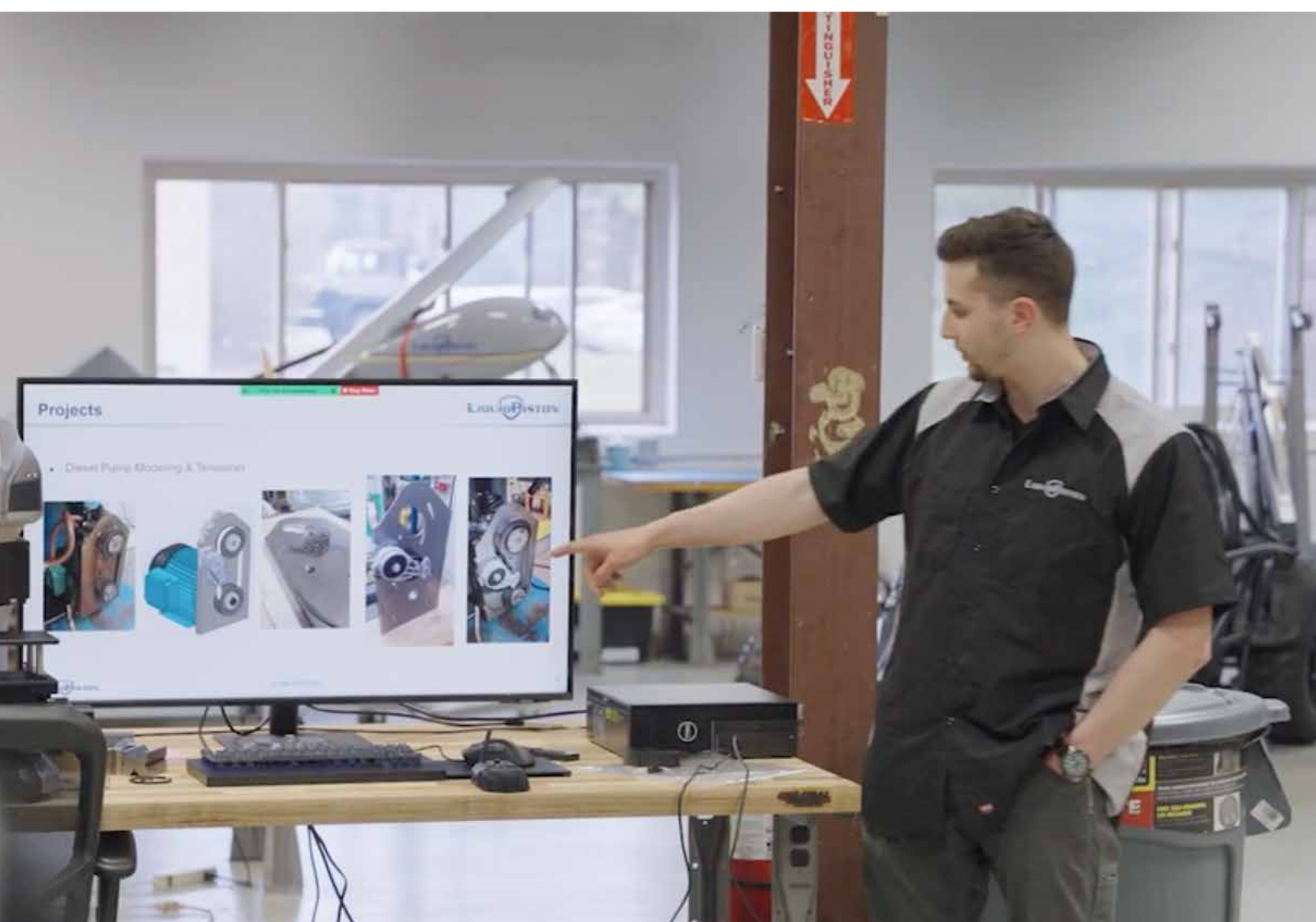


Images courtesy of Archer Aviation.





Images courtesy of Liquid Piston.



## Compact Engine, High Power Outputs

The DAF faces significant challenges in transporting people and equipment worldwide, requiring massive amounts of energy and efficient power-generating technologies. To address this, LiquidPiston, a Connecticut-based company, has developed a compact rotary engine that offers improvements in efficiency, weight, size, vibration, and noise levels. This engine has tremendous scalability, operating in power ranges from 5 to 40 horsepower, and is being augmented for aircraft auxiliary power units.

The X-Engine, with its unique patented thermodynamic cycle, provides efficiency and low-noise benefits, making it an attractive solution for future military applications. LiquidPiston has secured four DAF SBIR contracts since 2020 to develop compact generators powered by the X-Engine technology. These contracts have focused on developing higher power outputs, while using Diesel/JP-8 fuel, to align with military logistical needs..

The company has also received a \$149,941 STTR award from AFWERX to explore hybrid-electric applications for VTOL aircraft in collaboration with the University of Wisconsin-Madison. In 2023, LiquidPiston was awarded a three-year, \$35 million contract to develop a lightweight, modular, and scalable Rotary Engine Hybrid Power System for DAF use. AFWERX and the Air Force Life Cycle Management Center awarded the contract, which included \$15 million in STRATFI money. This award builds upon an existing Phase II SBIR program supporting

the 144th Fighter Wing, which is developing an adaptive basing trailer to support rapid deployment of fighter jets..

The STRATFI project includes developing and demonstrating a versatile aerial power system, which will utilize the generator set as a “flying generator” to extend the range for VTOL and other hybrid-electric aircraft. This contract marks a significant step towards transitioning X-Engine technology to military use, with milestones including engine core design, manufacturing, performance testing, and durability testing, culminating in a final engine demonstration in November 2026.

The potential military applications of the X-Engine are vast, with possibilities including providing power for swarms of small UAS or eVTOLs, and supporting other innovative experiments.. The X-Engine technology has the potential to enhance the mobility and operational efficiency of military units, reduce logistical burdens, and increase mission effectiveness.

**With its compact and efficient power generation, fuel efficiency, and logistical simplification, LiquidPiston’s X-Engine is poised to make a significant contribution to the defense innovation base.**



# Cooling Cart Benefits Fighter Jet Readiness

At Luke Air Force Base in Arizona, cooling carts used to protect F-35 fighter jets from extreme heat frequently overheated and shut down, causing significant delays and disruptions to maintenance and flight operations. In 2021, this happened over 100 times, resulting in maintainers having to wait nearly an entire shift for the jets to cool down before resuming work.

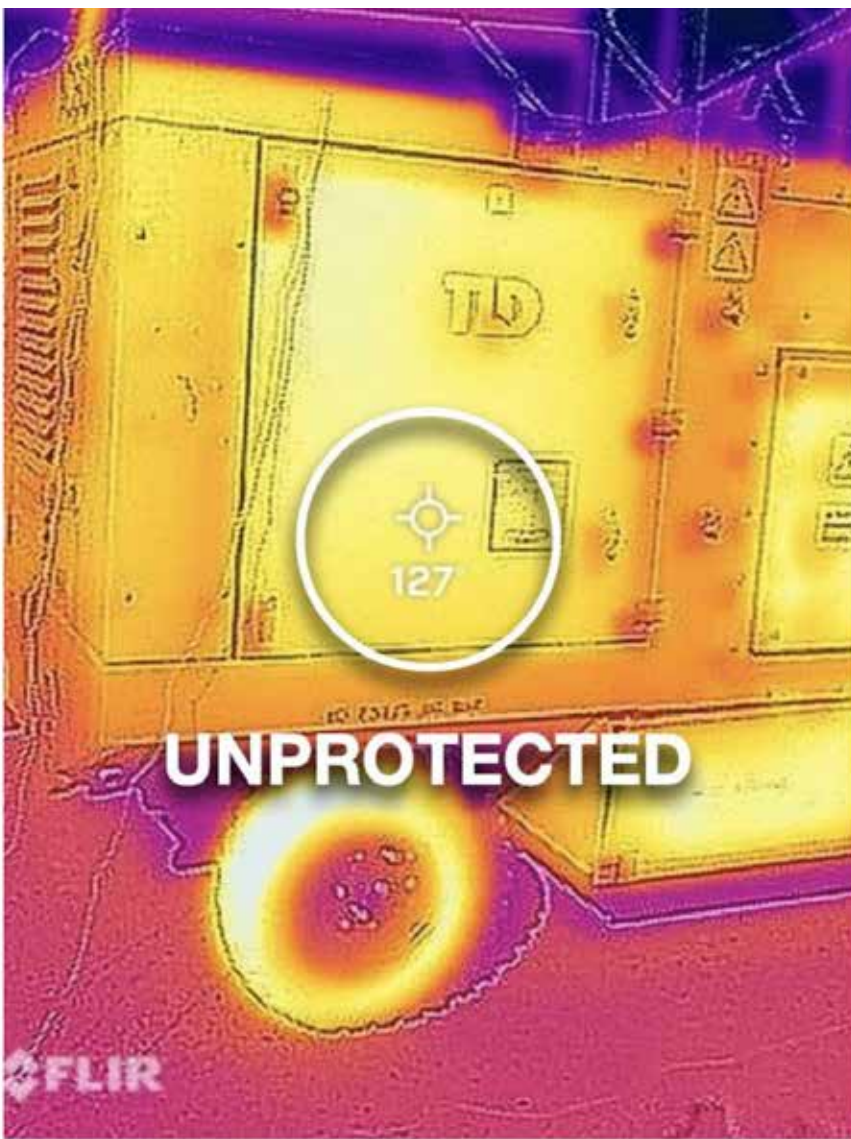
To address this issue, the Luke AFB Spark Cell approached PHOOZY, a commercial company, to adapt its thermal capsule technology to the F-35 flightline. PHOOZY built a prototype, the Advanced Thermal Protection System, which consists of three components: a thermal capsule with a condensing cooler system, an AC Hose Thermal Couple, and an ATPS/CCS cart. This technology increased the cooling cart's continuous operating time by over 2,100 percent and reduced its temperature by 37 degrees Fahrenheit.

In 2022, PHOOZY was awarded a \$1.2 million Direct-to-Phase II SBIR contract to develop a prototype of a protective cover over the cooling cart. This prototype extended the cart's operational time to over four hours, providing additional time for F-35 maintainers to perform necessary tasks in high-temperature conditions. The SBIR route allowed for a successful prototype to be developed in just 18 months.

The technology has shown promising results, and members of the 56th Maintenance Group have shared data with the Air Combat Command's Directorate of Logistics, Engineering and Force Protection. In August 2024, the Luke AFB Spark Cell demonstrated the technology to the F-35 Joint Product Improvement Working Group, potentially paving the way for a solution to be developed for the entire F-35 program. This innovation has the potential to significantly improve aircraft readiness and reduce maintenance costs, and its transition to the wider DOD could have a major impact on F-35 operations.



Images courtesy of P-Group / PHOOZY.







Images courtesy of K2 Space.

## Large Payloads, Orbital Versatility

The DAF must respond rapidly and flexibly to threats in an increasingly congested and contested space domain, a mission that requires innovative and cost-effective solutions for developing and deploying advanced space capabilities. K2 Space, a Torrance, California company, is developing a low-cost, high-capability satellite platform capable of carrying large payloads and operating in various orbits, including low Earth orbit (LEO), medium Earth orbit (MEO), geosynchronous orbit (GEO) and cislunar space.

The K2 satellite bus delivers 10 times more power than other low-cost buses in its class and boasts a large payload deck. Its multi-orbit capability and high launch density, with up to 10 satellites per launch, support diverse missions and rapid constellation deployment. With the advent of more powerful launch vehicles, K2 went against the grain, using heavier, inexpensive materials that could reduce costs by 90 percent.

Recognizing the potential of K2 Space's technology, the DAF during FY23-24 awarded the company multiple SBIR and STTR contracts meant to support its initial early work on its satellite technology.

Then, as FY24 drew to a close, K2 Space was awarded a \$60 million STRATFI contract by SpaceWERX and Space Force, Air Force Research Laboratory and the Pentagon's Space Test Program, reaching this milestone at blazing speed, just halfway through their period of performance.

Consisting of SBIR and other government funds, as well as private capital, the STRATFI will support the completion of K2's mega-class satellite bus. The project will include designing and building payload interfaces, integrating payloads, launch, and operation for a minimum of 18 months after launch.

The mission, dubbed 'Gravitas,' will provide an opportunity to de-risk the satellite platform and prove its capabilities. This efforts has also received support from the DOD's Space Development Agency, Space Force's Space Domain Awareness and Combat Power Program Executive Office, Space Warfighting Acquisition Delta and National Space Test and Training Complex.

**The company also participated in the Tactically Responsive Space Challenge, a joint initiative aimed at accelerating the development of space technologies. K2 Space successfully competed and was awarded an SBIR contract, demonstrating its innovative approach.**



# Rapid-launch Capable, Deterring On-Orbit Threats

As on-orbit threats proliferate, the DAF and Space Force are working with the private sector to secure cutting-edge systems capable of deterring or countering adversaries' aggressive or irresponsible actions in space. The VICTUS HAZE program, launched in 2024, has marshaled the technology and expertise of two space companies, True Anomaly and Rocket Lab USA, to provide the Space Force with Tactically Responsive Space (TacRS) mission capabilities.

In April, Space Systems Command's Space Safari Program Office, with funding from SpaceWERX and the Defense Innovation Unit (DIU), awarded contracts to the two companies. SpaceWERX awarded a \$30 million Emergent Need SBIR contract to True Anomaly. The Centennial, Colorado, startup, which is leveraging another \$30 million from private investors, bringing the total investment to \$60 million.

The second participating company, Rocket Lab, based in Long Beach, California, received \$32 million in funding from DIU. The companies will each demonstrate their ability to build rendezvous and proximity operation (RPO)-capable space vehicles and command and control centers, with a delivery target of fall 2025. Once the build phase is complete, the mission will enter several successive phases, including "hot standby"—awaiting a rapid manifest and launch request.

The TacRS systems developed by these companies will position the Space Force to provide future capabilities to Combatant Commands, equipping them to conduct rapid operations in response to adversary on-orbit aggression. The demonstration will also enable development of TacRS tactics, techniques and procedures when responding to adversary aggression on orbit.

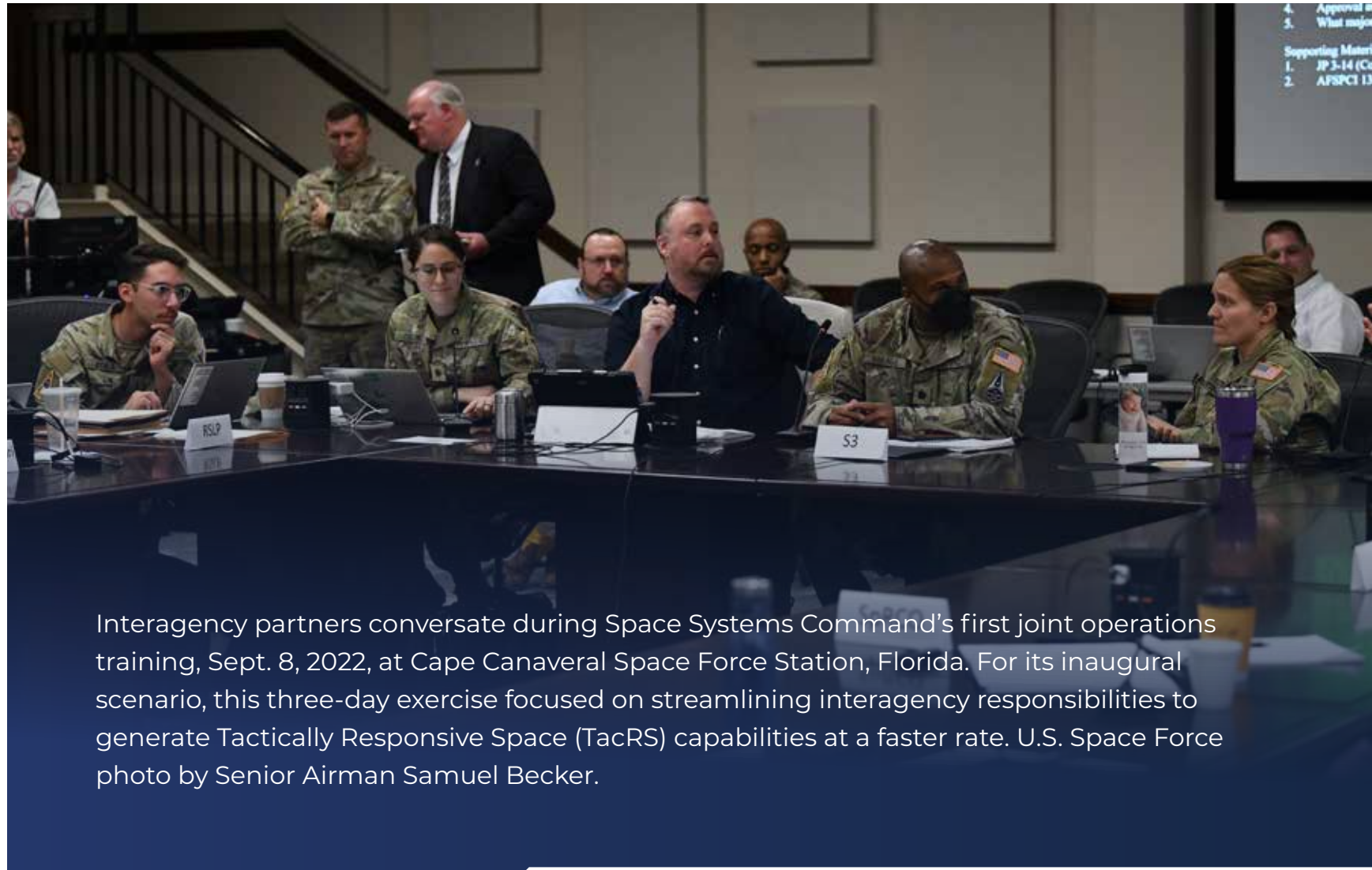
Space Safari partnered with SpaceWERX for assistance in the technical and commercial evaluation of True Anomaly and the push for an emergent SBIR selection by Space Force leadership. Space Safari is leading the contract administration, providing programmatic oversight and will execute the mission using capabilities provided by True Anomaly.

The VICTUS HAZE program underscores the DAF's commitment to leveraging private-sector innovation to address critical space challenges. By fostering collaboration between government agencies, industry leaders and innovative startups, this initiative will significantly enhance the Space Force's ability to maintain dominance and ensure freedom of action in space.

True Anomaly began working with SpaceWERX in 2023 through the SpaceWERX TacRS Challenge, a program focused on gaining new technologies that will enable the Space Force to more rapidly and flexibly respond to emerging on-orbit threats by 2026.



Artist's illustration of Rocket Lab's spacecraft for the U.S. Space Force's Tactically Responsive Space mission, VICTUS HAZE. Credit: Rocket Lab



Interagency partners conversate during Space Systems Command's first joint operations training, Sept. 8, 2022, at Cape Canaveral Space Force Station, Florida. For its inaugural scenario, this three-day exercise focused on streamlining interagency responsibilities to generate Tactically Responsive Space (TacRS) capabilities at a faster rate. U.S. Space Force photo by Senior Airman Samuel Becker.





With support from AFWERX STRATFI funding, Boom Supersonic is developing Overture, the world's fastest airliner, optimized for speed, safety, and sustainability. Overture will fly at twice the speed of today's airliners and is optimized to run on up to 100% sustainable aviation fuel (SAF). Images courtesy of Boom Supersonic.

## Mission Execution At Supersonic Speeds

The DAF procures bombers, cargo planes, drones, fighter jets, and other aircraft warfighters need to deter conflict and win decisively. The department also acquires, maintains, and operates aircraft used to move government and military leaders. Acquiring executive aircraft capable of supersonic speeds could halve travel time, allowing U.S. leaders to meet with foreign counterparts more often.

Boom Supersonic is developing Overture, a commercial airliner capable of carrying 80 passengers at Mach 1.7. On Jan. 28, 2025, Boom's demonstrator aircraft, the XB-1, broke the sound barrier during a test flight near Mojave, California. The jet climbed above 35,000 feet and accelerated above Mach 1. The flight was the first time an independently developed aircraft flew supersonically, proving the company's technology.

The XB-1 flight proved key technologies, including augmented reality vision systems, carbon-fiber composite materials, digitally-optimized aerodynamics, and supersonic inlets, can be used in Overture. The test jet's inaugural flight was in March 2024. It completed 11 test flights before this year's flight.

AFWERX began working with Boom several years ago. In September 2020, it awarded Boom a SBIR contract to investigate Overture for executive airlift. The following year, AFWERX awarded Boom a three-year, \$60 million STRATFI contract to explore Overture for Air Force executive airlift. This included \$15 million in SBIR funding. PACAF and the Presidential and Executive Airpower Directorate provided \$15 million, and private investors put in \$30 million. Boom expects Overture flight testing to begin in 2026, with passenger flights in 2029.

Boom has also partnered with Northrop Grumman to provide the government with aircraft for special missions, such as surveillance, reconnaissance, command and control, and mobility/logistics. In September 2023, Boom created a Defense Advisory Group of military and defense experts to assess Overture for national security missions.

**Boom also broke the sound barrier three times without a sonic boom reaching the ground, which executives attributed to its propulsion technology and autopilot system.**



# Rugged Build, Off-Grid Communications Enhancing Warfighter Connectivity

goTenna, a leading developer of mobile mesh networking technology, provides critical communication solutions for the DOD and the DAF. Based in Jersey City, New Jersey, the company specializes in low-cost, lightweight and off-grid networking solutions that allow mobile, long-range connectivity even without cell, wifi or satellite services.

goTenna’s core product line, Pro X, consists of ruggedized, user-friendly mobile ad-hoc networking (MANET) radios. These devices, deployed across six Combatant Commands, empower warfighters to maintain situational awareness and execute missions effectively in austere environments.

The company has forged strong partnerships within the Department of Defense, collaborating with the Air Force Special Operations Command (AFSOC), the Space Force, and the 194th Mission Support Group to develop innovative solutions. These collaborations have resulted in advanced network relay capabilities, improved base security, and the development of low probability of detection and intercept (LPD/LPI) waveforms for space-based assets.

When Hurricane Sandy in October 2012 struck New York and New Jersey, the deadly storm took out an estimated 25 percent of the region’s cell towers. Not only did customers lose cell phone service and electricity, but the damage also knocked out some

911 emergency call centers. The early goTenna technology was developed in response and the company has since continued expanding its product lines and customer base. Today, more than 300 military, law enforcement and public safety agencies use goTenna’s products.

In 2021, the company received its first Phase I SBIR program contract from the AFWERX Ventures’ division. Ventures funds emerging technologies to deliver Air Force and Space Force capabilities and broaden access to disruptive innovation. During the next few years, the company continued working with Ventures, securing a dozen DAF SBIR contracts, totaling \$5.8 million. The firm also added other DOD customers such as the Air Force Special Operations Command, the Space Force, the Navy and the Washington Air National Guard.

In July 2024, goTenna was awarded a STRATFI contract to develop and enhance its commercial off-the-shelf mesh communication equipment. The STRATFI program, unique to AFWERX, pools SBIR funds with other government and private capital to help projects transition between development and full production. The goTenna contract includes \$15 million in SBIR funds, \$15.5 million from the Air Force Special Operations Command and \$24 million in private capital. Additionally, the business has secured a Phase III contract with the Air Force Life Cycle Management Center’s Theater Battle Management Division. The division is located at Hanscom Air Force Base, Massachusetts.



The Air National Guard 147th Attack Wing TACPS alongside F Company 2-149th General Support Aviation Battalion (GSAB) and various military and armed forces participated in search and rescue training at Joint Base Antonio Camp Bullis, San Antonio, Texas in preparation for natural disaster rescue efforts. Photo by Tech. Sgt. Tenelle Marshall.





Images courtesy of Varda Space Industries.

## Revolutionizing Hypersonic Testing with Commercial Re-entry Capsules

Hypersonic flight, with its extreme speeds and heat, poses significant testing challenges due to the high costs and logistical difficulties of ground-based facilities. This lack of real-world data can cause design uncertainties, higher development costs and potential vehicle failures. SpaceWERX, the innovation arm of the U.S. Space Force and a unique division within AFWERX, found a solution in technology wielded by Varda Space Industries, a California-based startup.

Varda manufactures pharmaceuticals and optical fibers in Low Earth Orbit (LEO) in compact satellites and returns them to Earth in reentry capsules. The capsules are outfitted with advanced thermal protection materials developed by NASA to withstand reentry. Recognizing the potential of these capsules for hypersonic testing, Varda partnered with the DAF to adapt them into a Mach 25-plus hypersonic flight testbed. This provides a more affordable alternative to traditional programs with test flights costing more than \$100 million.

Since 2021, AFWERX has awarded Varda four SBIR contracts. Those agreements focused on developing thermal protection systems for Varda's reentry capsule, crucial for both its commercial mission and future hypersonic testing. In May 2023, SpaceWERX awarded Varda a \$60 million STRATFI contract to create a dedicated hypersonic flight testbed. This contract

included payload integration, user guide development, and two orbital reentry missions. The STRATFI included \$15 million in SBIR funds, \$15 million in government matching funds from AFRL Space Vehicles Directorate, and \$30 million from private venture capital investors.

**In December 2024, AFRL awarded Varda a four-year, \$48 million contract to further develop and use its reentry capsules for hypersonic payload testing. This Phase III award marked another step in the technology's successful transition.**

In January 2025, Varda was slated to fly its first mission under the AFRL contract, and its second for the DAF. Dubbed the Winnebago-2, or W-2, the capsule carried the OSPREE (Optical Sensing of Plasmas in the Reentry Environment) spectrometer. The device collects atmospheric information during a craft's rapid descent to Earth.



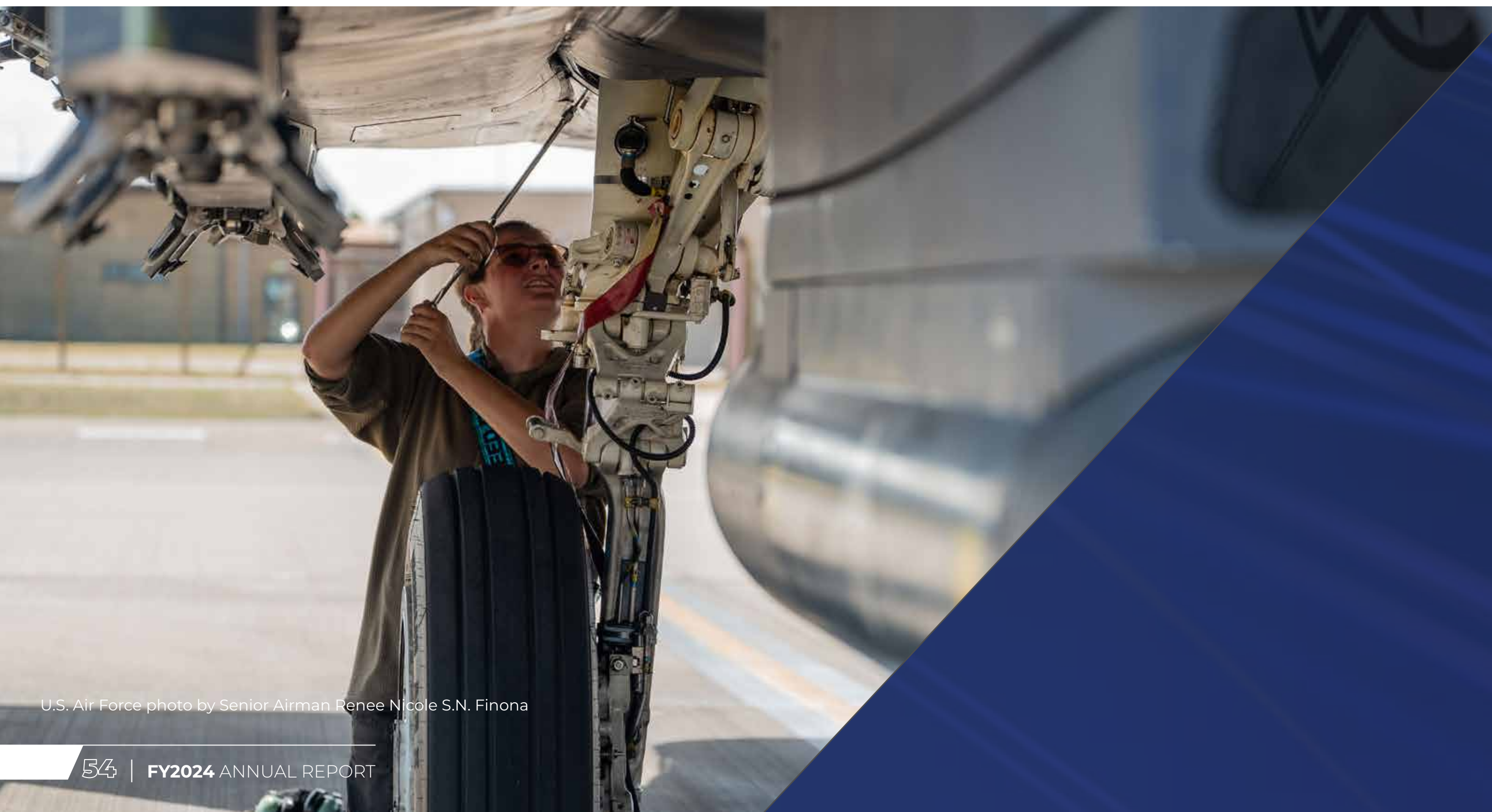
# PART FOUR:

## **SUPPORT SERVICES**



# PART FOUR: SUPPORT SERVICES

AFWERX's pursuit of innovative technologies to deter and win wars relies heavily on the strong foundation of its core operational functions. The Operations, Financial Management, Contracting and Capital Initiatives divisions serve as the backbone of our organization, ensuring that we have the resources, processes and safeguards in place to effectively execute our mission.



**AFWERX's pursuit of innovative technologies to deter and win wars relies heavily on the strong foundation of its core operational functions.**

U.S. Air Force photo by Senior Airman Renee Nicole S.N. Finona



AFWERX Operations (RGO) anticipates and provides the dynamic and agile capabilities necessary to ensure the DAF's ability to transition commercial technologies to warfighter use. RGO provides a support system that allows AFWERX to work effectively with stakeholders and industry by using innovative workflow technologies, drawing upon Airmen and Guardian talent and creating an infrastructure that maximizes operational efficiencies.

# OPERATIONS

## MOVING FAST TO ACQUIRE WINNING CAPABILITIES

### STREAMLINING TECHNOLOGY, HARDWARE DEPLOYMENT:

The AFWERX Technology Operations (RGOT) unit is crucial to AFRL's digital transformation, overseeing IT infrastructure and data pipelines essential to AFWERX's mission. In FY24, the unit deployed over **100** new laptops through the Defense Research and Engineering Network (DREN) initiative and more than **8,000** IT support tickets, up **80** percent from FY23.

### MONITORING HIRING, OTHER TRENDS INSTANTLY:

The Human Resources and Workforce Management unit (RGOM) empowers and enhances a diverse and geographically distributed team, contributing to organizational success and mission fulfillment. The unit launched the Civilian Actions Metrics Dashboard in FY24 to track personnel actions and provide real-time reporting to identify hiring trends.

### KEEPING BUDGET LEAN, FOCUSED:

The AFWERX Plans and Programs Branch (RGOX) manages budgeting and strategic planning, ensuring alignment with DOD and DAF priorities and guaranteeing fiscal responsibility and alignment with national defense goals. In FY24, RGOX developed a real-time tracking dashboard of DAF SBIR/STTR Phase III transitions.

### TAKING CARE OF BUSINESS:

The AFWERX Business Operations Branch (AFRL/RGOI) is a vital element within AFWERX, responsible for managing and optimizing essential business-related functions. In FY24, RGOI achieved its full staffing level by adding two new team members, which significantly expanded AFWERX's support capabilities and built resilience for uninterrupted, high-quality customer service.

### SHIELDING AFWERX'S DATA:

The Information Protection/Security unit (RGOS) supports AFWERX by ensuring information-protection requirements are fulfilled and sensitive data and intellectual property is safeguarded. In FY24, the new unit added three team members, guaranteeing that enhanced information security methods will be utilized.



In 2022, Congress passed Public Law 117-183, the “SBIR and STTR Extension Act of 2022.” This law mandated all federal agencies awarding SBIR and STTR funds to create and execute a risk-based due diligence program for all applicants.

This mandate posed a distinct challenge for AFWERX. Among the agencies affected by this law, none handled the same scale of funds or volume of requests per year as AFWERX, which accounts for \$1.5 billion of award funding, more than 65 percent of the total under the Under Secretary of Defense for Research and Engineering oversight. Addressing such a challenge demanded thoughtful analysis and creative solutions. Over the course of several months, AFWERX examined the problem, identified best practices and implemented a first-in-class, risk-based analysis process months ahead of schedule and under budget.

By the time of the congressionally mandated deadline of June 27, 2023, AFWERX had already conducted **3,925** risk-based reviews. By the end of FY23, the organization had processed a total of **7,940** applications, nearly triple the screenings of any other SBIR program participant and by the end of FY24, the number grew to **14,088**.

**Due Diligence**  
enabled AFWERX to redirect  
\$62M to lower-risk investments



**SAFEGUARDING  
TAXPAYER DOLLARS  
FROM FRAUD, FOREIGN  
INTERFERENCE**

**17,858**  
RISK-BASED REVIEWS

- 2,310 Reviews with foreign affiliations & connections **12.9%** of reviews
- 2,147 Reviews with foreign investment risk **12.02%** of reviews
- 290 Law enforcement and CI reviews **1.62%** of reviews

# DUE DILIGENCE

## THE PROBLEM

IP theft has major economic impact

**\$225B**

SBIR/STTR program is targeted by adversaries



## THE MEANS

Review of 4 major risk factors:



Foreign Ownership



Employee Analysis



Patent Analysis



Cybersecurity Practices

The SBIR and SBIR Extension Act of 2022

## THE METHODS

Conduct tiered review for all Phases & Programs through partnerships w/ OCEA & OSI





The AFWERX Financial Division (RGF) provides financial services and products that support AFWERX, small businesses and DOD customers while also ensuring responsible stewardship and public accountability of resources. Additionally, it supplies decision makers accurate and timely financial information and decision support. The AFWERX Chief Financial Officer is the financial authority for the DAF SBIR/STTR, Prime, squadron-innovation and technology transfer programs.

# FINANCE

## RAPIDLY FINANCING ADVANCED WARFIGHTING TECH





In FY24, the Finance team leveraged Power BI, a business intelligence platform, to increase workflow efficiency and process automation. They implemented and are currently testing dynamic dashboards and real-time analytics through Power BI, enabling streamlined workflows by centralizing financial data.

**This helped automate routine tasks, reduce manual data entry, and provided actionable insights that led to improved decision-making and significant time savings across financial operations.**

**BUDGET GROWTH** BY FISCAL YEAR (\$M)



	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
AF SBIR/STTR - RDT&E PE 65502F	\$373.60	\$406.50	\$663.30	\$794.01	\$884.05	\$661.50	\$780.35	\$836.70	\$946.80
SF SBIR/STTR - RDT&E PE C5502S	\$ -	\$ -	\$ -	\$ -	\$ -	\$256.92	\$290.49	\$391.47	\$455.43
AFWERX - RDT&E PE 64317F/64009F	\$ -	\$ -	\$ -	\$ -	\$17.35	\$2.95	\$9.89	\$13.22	\$35.48
Prime - RDT&E PE 64858F/64009F	\$ -	\$ -	\$ -	\$ -	\$24.12	\$24.12	\$127.35	\$145.63	\$95.92
SIF - O&M PE 78534F	\$ -	\$ -	\$ -	\$ -	\$5.20	\$0.55	\$2.69	\$5.70	\$6.71
TOTAL (\$M)	\$373.60	\$406.50	\$663.30	\$794.01	\$930.72	\$946.04	\$1,210.77	\$1,392.30	\$1,540.33



The AFWERX Contracting Division (RGK) enables the DAF and the broader DOD to have access to a portfolio of small businesses engaged in novel, innovative defense activity. The unit supports the delivery of critical research and development (R&D) to AFWERX and the DAF, with an emphasis on next-generation commercial and dual-use technologies to close capability gaps and satisfy mission requirements. Combining SBIR/STTR awards and core-funded requirements, the RGK team postures AFWERX to deliver and scale critical defense capabilities.

# CONTRACTING

**EMPOWERING DEFENSE INNOVATION WITH TOOLS, PROGRAMS:**

The Enterprise Contracting Branch (RGKA) supports the delivery of a variety of capabilities across the AFWERX organization. RGKA utilizes contracting approaches to provide AFWERX with day-to-day operational tools, develop and scale Prime programs, support Challenge programs, and execute certain STRATFI/TACFI efforts.

**GENERATING A STEADY FLOW OF PRIVATE-SECTOR INNOVATIONS:**

The SBIR/STTR Contracting Branch (RGKB) supports the program’s contracting efforts under the AFWERX Open Topics program. This branch applies innovative acquisition processes, executing high volumes of Phase I and Phase II awards on a repeatable annual cycle. RGKB awards predominantly fixed-price contracts or Other Transaction Agreements through Contracting Sprints, a rapid-paced execution model utilized by AFWERX. Applying streamlined methods and processes for various aspects of SBIR/STTR contracting is a staple of this team.

**FINDING COLLABORATIVE VENTURES, FUNDING AUTHORITIES FOR AFWERX**

The Innovation Support Contracting Branch (RGKP) provides training and support within AFWERX, while also operating as an incubator for external mission partners. RGKP also explores collaboration opportunities for AFWERX. The branch is responsible for various automation activities, policy reviews, contract closeouts, and other organizational processes.



**FY24:** FAST-TRACKING DEFENSE INNOVATION FUNDING,  
ENGAGING THE COMMUNITY

**RAPID, FOCUSED CONTRACTING  
TO ADVANCE WARFIGHTER READINESS**

**CONDUCTED** **4**  
SBIR/STTR OPEN TOPIC  
CONTRACTING SPRINTS

**DELIVERED PHASE I  
AWARDS WITHIN  
78 DAYS  
AND PHASE II  
AWARDS WITHIN  
85 DAYS  
OF SOLICITATION CLOSING**

U.S. Small Business Administration's  
standard: 180 days

**AWARDED  
APPROXIMATELY  
1,000  
PHASE I AND PHASE II  
CONTRACTS AND  
OTHER TRANSACTIONS  
TOTALING MORE THAN**

**\$550M**

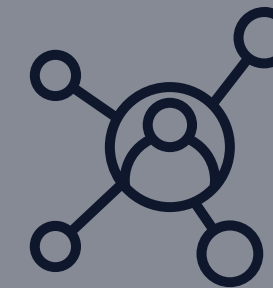
**COLLABORATING WITH THE NATION'S  
DEFENSE AND INDUSTRY LEADERS**

Provided training for  
**MORE THAN**

**2000**

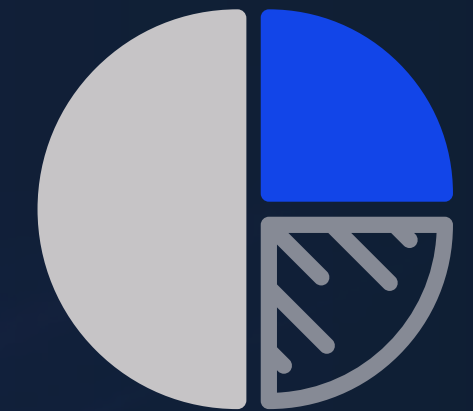
**DEFENSE DEPARTMENT  
AND DEFENSE INDUSTRIAL  
BASE PERSONNEL**

at events, including Contracting  
Bootcamps, various Summits/  
Conferences, and Ventures Weekly  
Webinar Series via AFWERX.com.



**CONTRACTS  
AWARDED**

**TO DISADVANTAGED  
SMALL BUSINESSES**



**143** **WOMEN  
OWNED**

**161**  
SERVICE  
DISABLED  
VETERAN  
OWNED

**247**  
**VETERAN  
OWNED**

**HUBZone** **30**



**Cultivating and Transitioning  
Impactful Emerging Technologies  
to Deter and Win Wars**

**AFWERX · SPACEWERX**

**FY2024** ANNUAL REPORT