



AFWERX

Ms. Karen Roth, Deputy Director of AFWERX

# AFWERX | SPACEWERX

## **MISSION**

AFWERX accelerates 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

# UNLEASHING AMERICAN INGENUITY

## Historical Innovation



## Russia's Anti-Satellite Weapons: An Asymmetric Response to U.S. Aerospace Superiority

ARMS CONTROL TODAY

**THE WARZONE**  
China's Big New Twin-Jet L  
Endurance Armed Combat D  
Emerges

EurAsian Times

China's 'Carrier-Killer' & Russia's 'Super-Weapon' – W  
Sarmat & YJ-21 Missiles Are Creating Ripples In The W

INDEPENDENT

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News > World > Asia

China tests army of tiny drone ships that can 'shark swarm' enemies during sea battles

Fleet of 56 unmanned craft sent out on manoeuvres as battle capabilities touted by developers



Chinese AI Learns To Beat Top Fighter Pilot In Simulated Combat

EDITORS' PICK | Jun 18, 2021, 06:15am EDT | 1182 views

politics The Biden Presidency Facts First US Elections

Top military leader says China's hypersonic missile test 'went around the world'

THE DRIVE

China Acquiring New Weapons Five Times Faster Than U.S., Warns Top Official

Newsweek

China's Moon Base to Rival NASA Advances After Russia Deal

THE U.S. SUN

HOME NEWS ENTERTAINMENT LIFESTYLE MONEY HEALTH

ATTACK OF THE DRONES US is 'not ready' for a drone war with China as Washington has been 'preoccupied' with ISIS terror threat, expert warns

Geopolitical Monitor

Backgrounder: China's Military Modernization Comes of Age

WIRED

BACKCHANNEL BUSINESS CULTURE GEAR IDEAS SCIENCE SECURITY

Russian Missiles and Space Debris Could Threaten Satellites

As the war in Ukraine continues, the growing debris in low Earth orbit is a matter of national security.



AFWERX

# STRATEGIC MILITARY AND TECHNOLOGICAL COMPETITION

Competitors, adversaries rapidly moving to challenge and surpass the U.S. Air and Space advantage



**POWERFUL MARKET INFLUENCE**



**DUAL-USE TECH MATURATION**



**MEANINGFUL DEFENSE INDUSTRIAL BASE GROWTH**

# AFWERX: WHO WE ARE

**178** Civilians

**18** Military

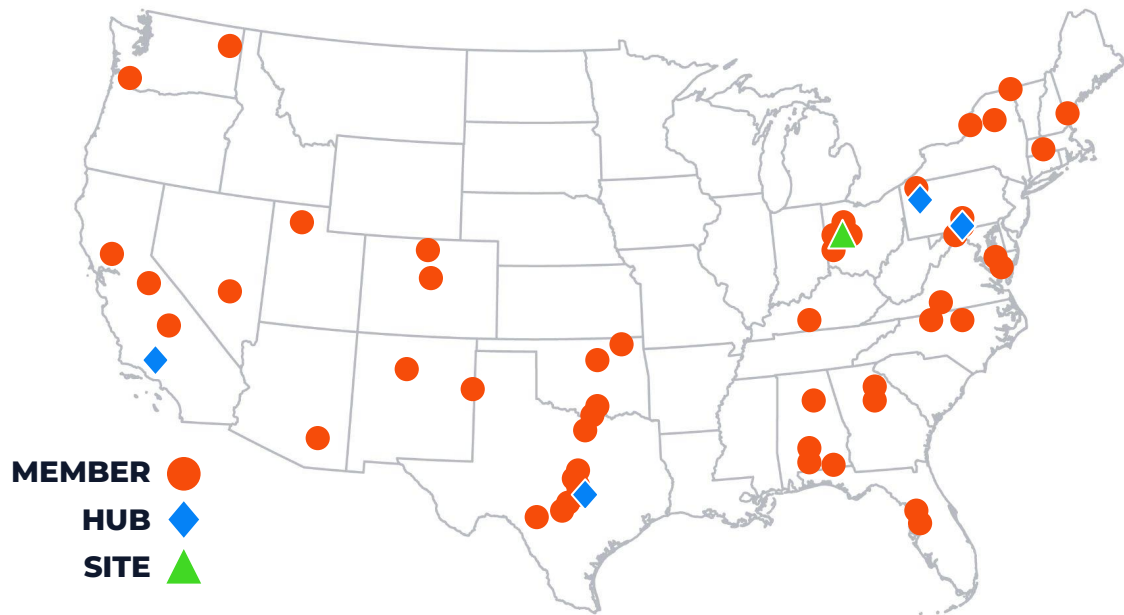
**176** U.S. SPACE  
Contractors

**100** Fellows

**10** Reservists

AFWERX | SPACEWERX

# AFWERX: WHERE WE ARE



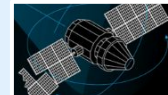
◆ Austin, TX  
HUB



▲ Dayton, OH  
SITE



◆ Los Angeles, CA  
HUB



◆ Pittsburgh, PA  
HUB



◆ Washington DC  
HUB



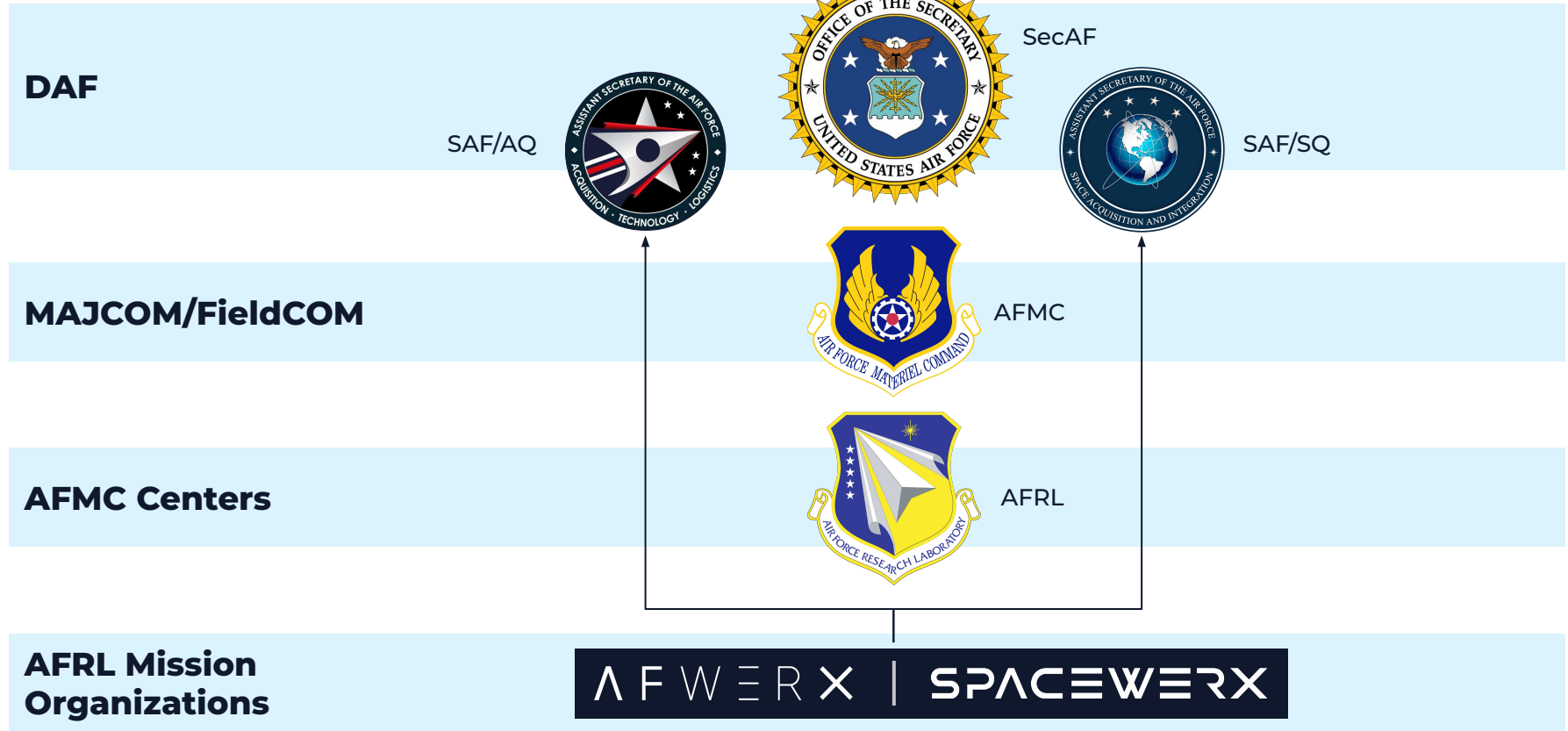
25 States

1 U.S. Territory

4 HUBS

1 SITE

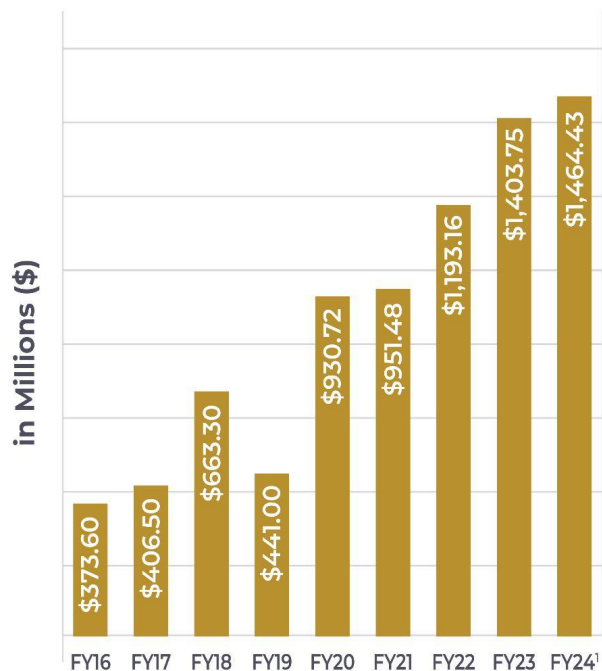
# DAF STRUCTURE



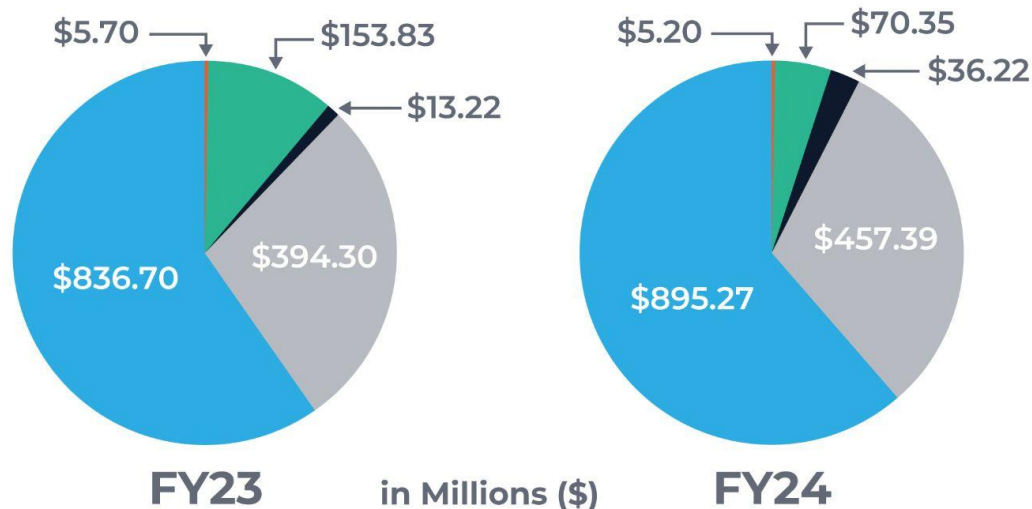


# FUNDING THE FUTURE

## AFWERX Funding Profile



<sup>1</sup>FY24 SBIR/STTR assumes 7% AF increase and 16% SF increase; actuals TBD based on FY24 DAF RDT&E extramural budget



# DIRECTOR'S PRIORITIES



Strengthen the Team



Commercialize the Force



Connect the Ecosystem

# AFWERX / SPACEWERX 3.0 OVERVIEW

Prioritize, Synthesize, Mature, Access, and Measure

Foster DAF's community of innovation

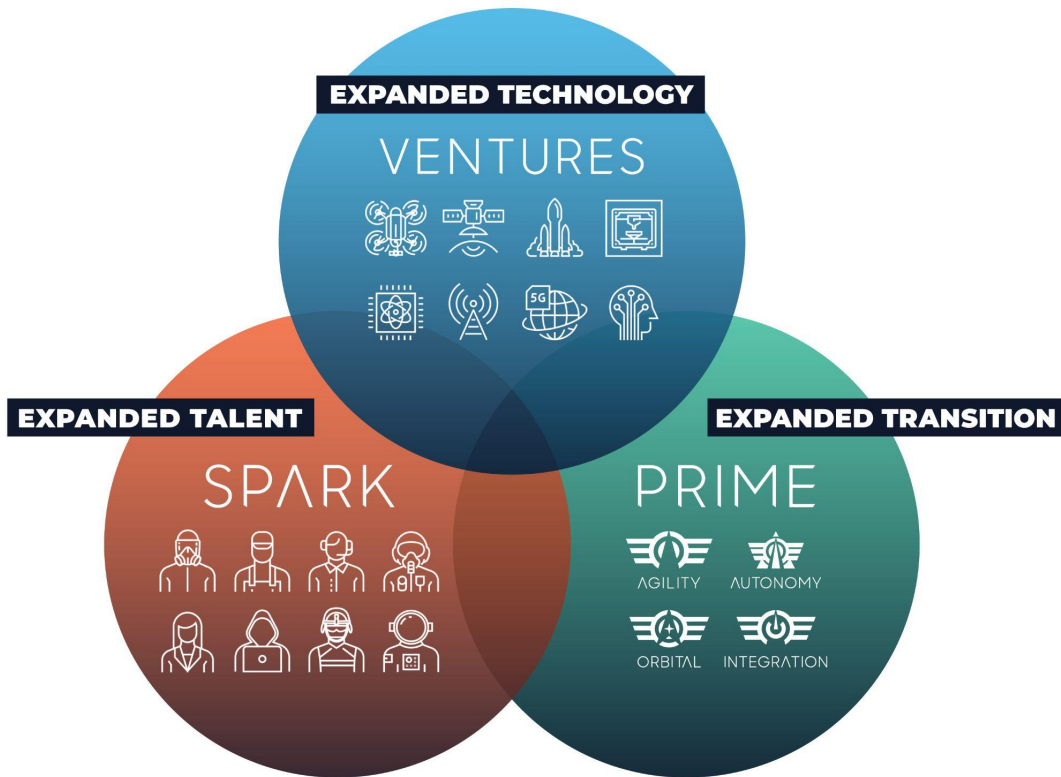
**6,028** New contracts executed since 2019

Strengthen the U.S. defense industrial base

**\$4B+** Obligated since 2019

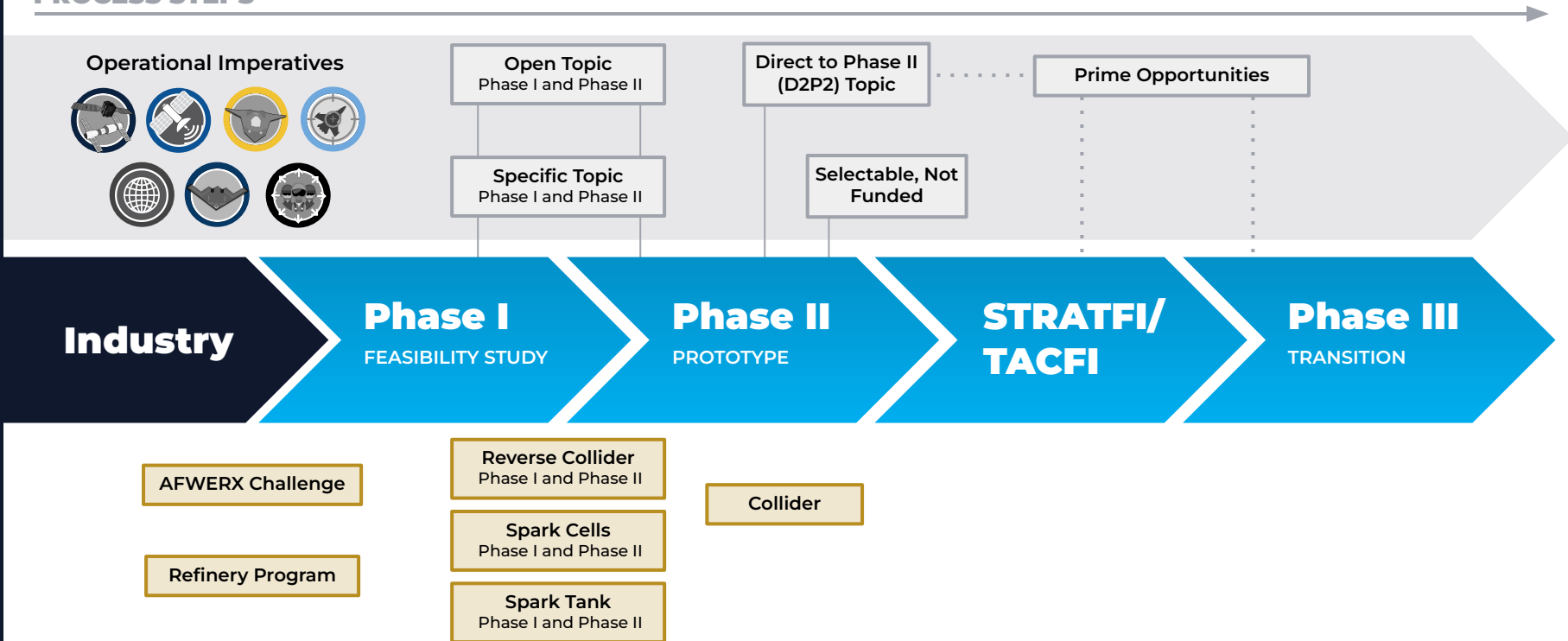
Accelerate delivery of capabilities

**360+** Transitions achieved to date



# THE AFWERX / SPACEWERX PROCESS

## PROCESS STEPS



## AIRMEN AND GUARDIAN INNOVATIONS



# AFWERX SUCCESS STORY

## Viper Hot Refuel Kit

2021 Spark Tank Finalist

### Technology

SPARK TANK 2021 Top 5 Finalist, VIPER Hot Refuel Kit, is a rapid refueling sled (kit) enabling "hot pit refueling," or faster aircraft refueling with one engine left on while the crew stays onboard. Two Airmen invented VIPER by configuring all existing AF-approved parts for a universal adapter that replaces the need to send fuel trucks to austere locations.

### Operational Impact

VIPER Hot Refuel Kit supports agile combat deployment. As of July 2023, 60 kits have been deployed and this USAFE-AFAFRICA effort has saved \$142M in cargo shipping costs.

### TOTAL FUNDING

**\$1.2M** in Air Force funding

“ When you are working on solving a problem, keep asking “Why can’t we do this?” No one could tell us why not. ”

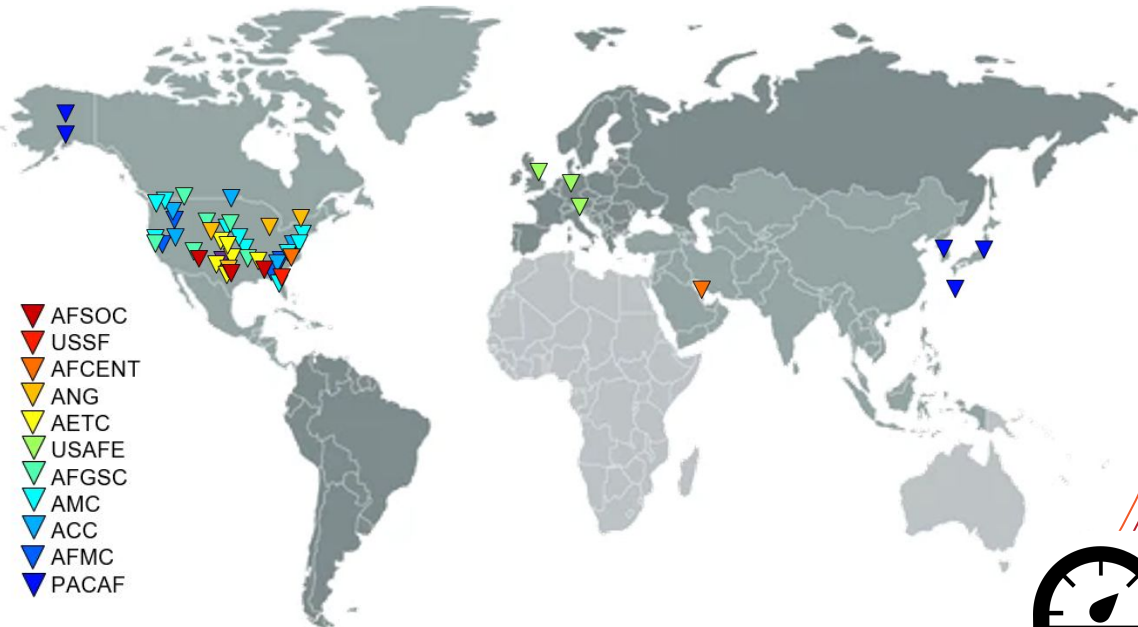
- Master Sgt Jason Yunker  
52nd Logistics Readiness Squadron



# SPARK CONNECTIONS

Empowering Innovators, Accelerating Results

Global Spark Network



## CONNECT

Build, empower and mobilize innovation networks



## DEVELOP

Develop DAF innovators through curriculum and experience



## SUPPORT

Support DAF innovators through facilitation and advocacy

Unparalleled access to and trust with DAF Innovators - 108 base-level cells, every MAJCOM, ~3,000 augmentees

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# VENTURES



# AFWERX SUCCESS STORY

## 3D Printed Buildings

ICON Technology, Inc.

### Technology

ICON is a construction technologies company that specializes in robotics, software and advanced materials that deliver homes and structures around the world. Through collaboration with the Texas ANG and AFWERX SBIR Program, ICON has constructed structures across multiple military facilities, while growing its business and technology.

### Operational Impact

Tyndall Air Force Base, following the catastrophic damage from Hurricane Michael in late 2018, worked with ICON to construct 3D-printed concrete buildings using their proprietary Vulcan construction system at speed and at lower cost than conventional methods. Engineers at AFIMSC are leading the research and development for possible future military construction projects.

### Funding Organizations

AFIMSC, ANG, NASA

### TOTAL FUNDING

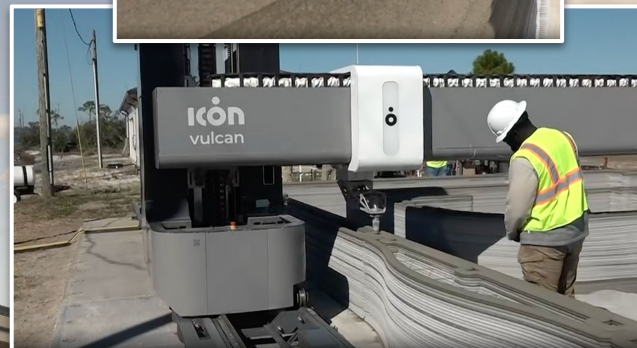
**\$29.1M** Phase II STRATFI (includes \$14.55M Private Funding)

**\$57.2M** NASA Phase III

“ [The Tyndall 3D-printed facility] is the first military building that we know of the meets the ‘Miami-Dade wind code standard.’ ”

- Brian Skibba

Airbase Technologies Branch Chief,  
Air Force Civil Engineer Center



# VENTURES OPPORTUNITIES

1

## PHASE I

### Feasibility Study

Open & Specific Topics

#### OPEN TOPIC

- Up to \$75K per award (\$110K for STTR)
- 3 month period of performance
- ~700 awards per year
- "Open door for innovation"

#### SPECIFIC TOPIC

- Up to \$180K per award
- 6 month period of performance
- ~300 awards per year
- Built in Air Force Customer

2

## PHASE II

### Prototype

Open, Specific & Direct to Phase II (D2P2) Topics

#### OPEN TOPIC

- Up to \$1.25M per award (\$1.8M for STTR)
- Up to 21 month period of performance
- ~350 awards per year
- Customer Memorandum required
- Matched funding encouraged
- D2P2 opportunity if customer is already known and Customer Memorandum is signed

#### SPECIFIC TOPIC

- Up to \$1.8M per initial award
- Up to 24 month period of performance
- ~200 awards per year
- Built in Air Force Customer
- D2P2 opportunities

3

## STRATFI/TACFI

Strategic Funding Increase (STRATFI) and Tactical Funding Increase (TACFI) Program

- Notice of Opportunity
- TACFI - \$375K - \$1.9M SBIR/STTR funds
- STRATFI - \$3M - \$15M SBIR/STTR funds
- Defense only or dual use matching options
- Private Investor Opportunities

4

## PHASE III

### Transition

- Continuation, derivation, or extension of SBIR/STTR Phase I, II or STRATFI/TACFI work
- Contract with partnering US Government customer
- Utilizes non-SBIR funds

\*Cost base max and period of performance are determined at the topic level and can be found within the solicitation instructions.

# YOUR NEXT OPPORTUNITIES

## DAF SBIR/STTR SOLICITATIONS



## PY24.2 STRATFI/TACFI SPACE NOTICE OF OPPORTUNITY



\*Closes at Noon ET

***\*Dates are subject to change***

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 PRIME

# AFWERX SUCCESS STORY

## eVTOL

Joby Aviation

### Technology

Joby Aviation produces an electric Vertical Take-off and Landing (eVTOL) aircraft that uses six vector thrust propellers on a fixed wing and stabilizer. The piloted aircraft can achieve 200 mph in cruise, has an approximate range of 100 miles plus reserves and is 100x quieter than a helicopter.

### Operational Impact

Joby delivered its first experimental eVTOL to the Air Force in September 2023. Joby is contracted to deliver up to nine of its low acoustic signature, zero-operating emissions aircraft to the Air Force and other government partners.

### Funding Organizations

AFWERX Agility Prime, DIU

## TOTAL FUNDING

**\$50K** SBIR | Up to **\$131M** Phase III Gov't Funding

“ This new technology is brought to the world in rapid fashion by the convergence of commercial industry and our American Airmen working shoulder-to-shoulder. ”

- Col Grant Mizell

412th Test Wing Operations Group commander



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# PRIME PROGRAMS



## AGILITY PRIME

Hybrid/Electric Vertical Takeoff and Landing (eVTOL) Aircraft

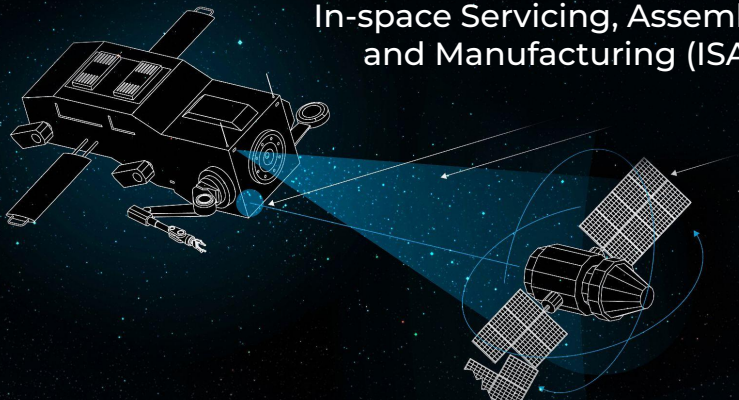
## AUTONOMY PRIME

Evaluate, iterate, and mature emerging mission and applied autonomy technologies into fielded capabilities



## ORBITAL PRIME

In-space Servicing, Assembly, and Manufacturing (ISAM)



## INTEGRATION PRIME

Leveraging industry software integration capabilities for DAF mission thread needs

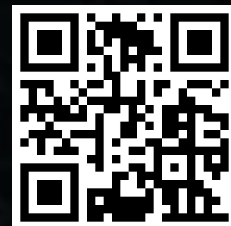


# CONNECT AND COLLABORATE

## Looking for . . . Novel Technologies? Defense Innovation?

Ignite is the platform where **Defense Users** and **Small Businesses** connect and collaborate to **Unleash American Ingenuity.**

**Look it up in IGNITE!**



# AFWERX | SPACEWERX

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# Questions?