Parallax
ADVANCED RESEARCH

Ohio Federal Research Network
Driving Innovation Through Strategic Partnerships

WELCOME!

Parallax ADVANCED RESEARCH + Ohio Federal Research Network

Driving Innovation Through Strategic Partnerships

Join us for

Ohio Federal Research Network (OFRN)

Opportunity Days

Free Virtual Event

January 25 | 8:30 - 11:00 AM (ET)

ohiofrn.org

The Ohio Federal Research Network (OFRN) is a program managed by Parallax Advanced Research Corporation in collaboration with The Ohio State University and funded by the Ohio Department of Higher Education.

Agenda

Agenda | Jan. 25, 2023

- 8:30 - 9:00 am - Networking (optional)

Main Session Begins

- 9:00 - 9:10 am - OFRN Overview by Major General (Ret.) Mark Bartman, Senior Advisor to Parallax Advanced Research supporting OFRN
- 9:10 - 9:35 am - Dr. Richard Vaia, Chief Scientist for Materials and Manufacturing Directorate, Air Force Research Laboratory (AFRL)
- 9:35 - 10:00 am - Steven Zech, Senior Intelligence Analyst, National Air and Space Intelligence Center (NASIC)
- 10:00 - 10:30 am - AFRL and NASIC Q&A
- 10:30 - 11:00 am - Opportunity Review

Introductions & Thank you

Parallax Team & Event Volunteers

- **Emcee:** Mark Bartman, Maj Gen (Ret.), USAF & ONG, OFRN Consultant

- **Parallax Team:**
  - Emma Warner
  - Karen Posey, OFRN Consultant
  - Becky Mescher
  - Jess Pacheco
  - Sophia Cipriani

- **Event Speakers:** Dr. Richard Vaia, Steven Zech, Julie Spears

- **Opportunity Review:**
  - Dr. Kathleen Gilpin, Director of Discovery and Engagement, Academic Partnership Engagement Experiment (APEX)

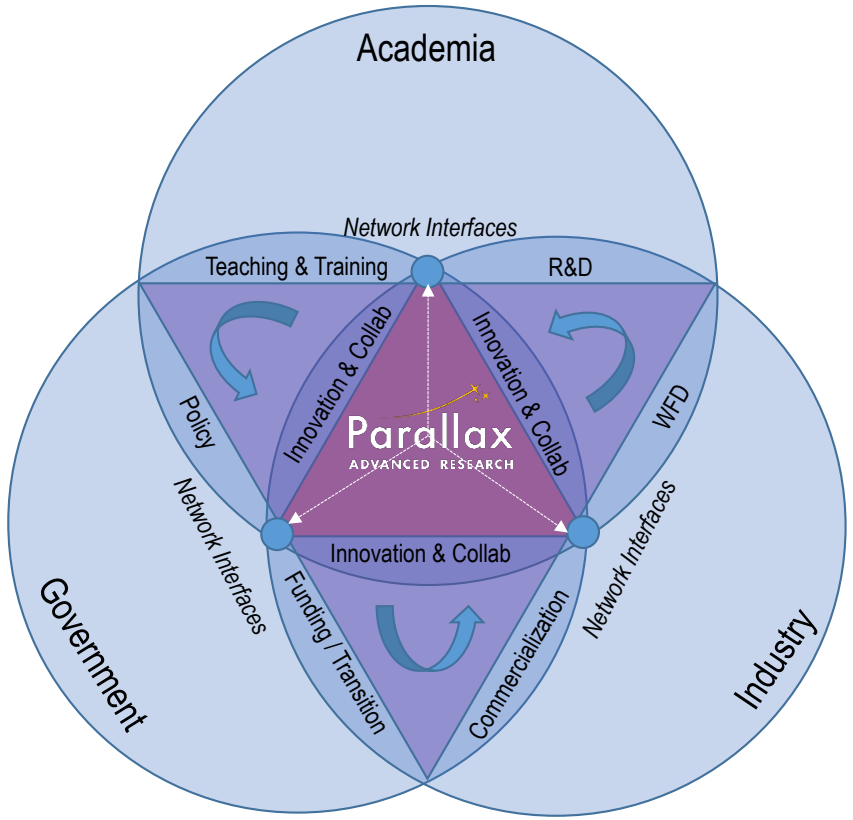
- **Government partners:** AFRL, NAMRU-D, NASA-GRC, NASIC, Ohio National Guard

News

Parallax Advanced Research and Ohio Aerospace Institute enter an affiliation

- The affiliation went into effect January 1, 2023.
- Both organizations are 501(c)(3) non-profits, and each will retain their respective, non-profit status with integrated operations.
- The integration results in cost savings and new opportunities for both organizations
- It will create new and larger federal and commercial research and development opportunities for academia, industry, and government

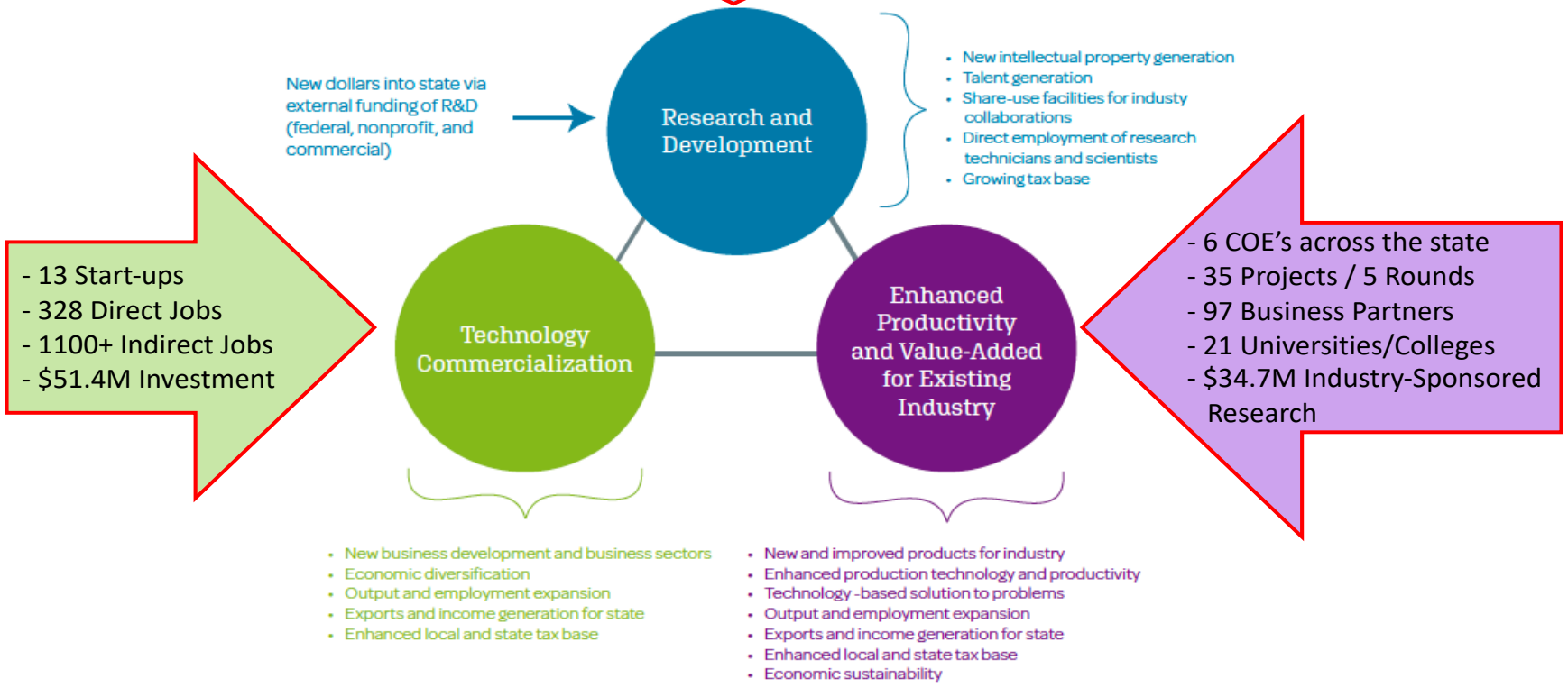
Opportunity Day



- Triple Helix Organization
- Support – Engage – Collaborate
- New R&D business and funding in Ohio
- Build Ohio's Entrepreneurship and Start-up Business

OFRN Outputs & Outcomes

- 12 IP Generated
- $354M+ Follow-on Federal funding
- $150M+ in 2022
- AFRL & NASA-GRC Facility use



- 13 Start-ups
- 328 Direct Jobs
- 1100+ Indirect Jobs
- $51.4M Investment

- 6 COE's across the state
- 35 Projects / 5 Rounds
- 97 Business Partners
- 21 Universities/Colleges
- $34.7M Industry-Sponsored Research

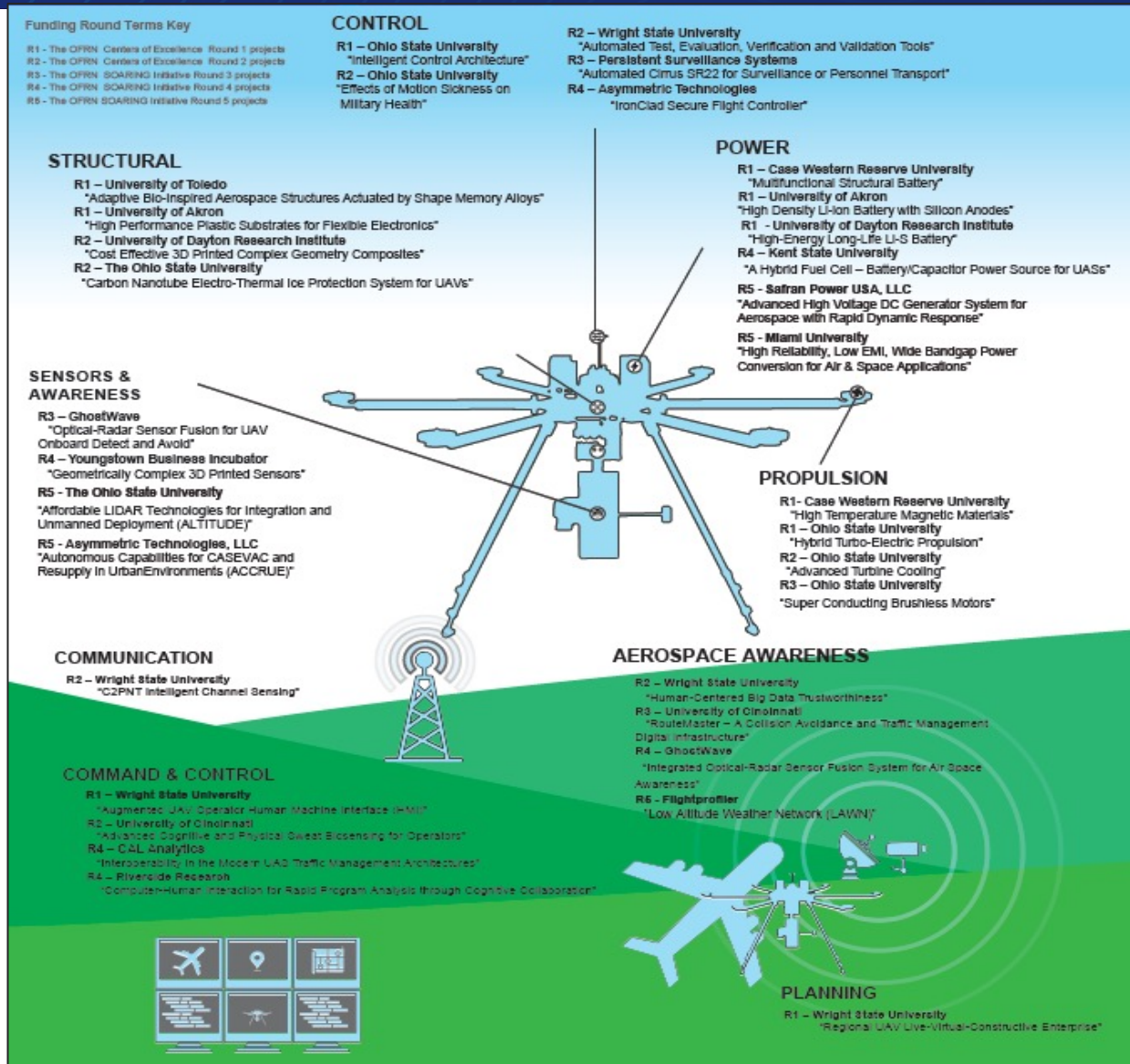
Source: TEConomy Partners, LLC

OFRN Funding

Round 5 - Soaring

Federal Partners' Areas of Interest

1. Vertical Take-Off & Landing (VTOL)
2. Situational awareness & Proliferated surveillance systems
3. Patient care in austere and contested environments
4. Personal exposure devices
5. Acceleration effects
6. Enabling human-machine teaming using brain-machine interfaces
7. Advanced power systems applicable to aviation propulsion, micro-grids and lunar surface operations
8. Quantum communications
9. Applications of commercial satellites to humanitarian, disaster, and defense topics
10. Large data set triage
11. Journal article warning and correlation



Round 6 Areas of Interest

- **Hypersonics** – Materials & Manufacturing technologies
- **Human Performance** – Ocular health monitoring and patient care in austere / isolated environments
- **High Power Energy Conversion** – Affordable DC Emulation & digital engineering
- **Digital Engineering Tools** – Techniques to convert between model fidelity levers or utilization of multifunctioning models
- **Commercial Space Operations** – materials joining automation in lower earth orbit and bio manufacturing.
- **Quantum Technologies** – integration of sensors, communication and or processors

Upcoming Events

- **DRIVE Consortium Industry Day** – virtual, February 21
- **48th Dayton-Cincinnati Aerospace Science Symposium –** in-person @ Sinclair Ponitz Conference Center, February 28
- **Ohio Air Mobility Symposium –** in-person @ Ohio State University, March 29-30
- **Ohio Global Aerospace Summit –** in-person @ Cleveland, May 15

Emerging Innovation Ecosystems and Partnerships with AFRL: *R&D Impacting USAF and USSF*

Richard Vaia

Chief Scientist
Materials and Manufacturing Directorate, Air Force Research Laboratory
Wright Patterson Air Force Base, Ohio, USA

richard.vaia@us.af.mil

Special Thanks:

NBMC, NextFlex, AFRL Regional Hub Teams

JR Russell, Kim Yoder, Tom Nelson, Chuck Ward, John Miller, Giorgio Bazzan, Lt Suren Uswatta, Brian McJilton

Rajesh Naik, Rob Marshall, Kevin Hill & Barge-Emersion Team

Air Force Research Laboratory

AFRL

Research and Development for the *U.S. Air Force* and *U.S. Space Force*

- Total Workforce ~ 12,000
- Gov't Workforce of ~ 6,300 (military, civilian)
- 70% govt S&Es with master's degree or higher (36% PhD)
- Locations: 11 states and 5 international
- ~$5 billion R&D funding (Core:Customer = 1)
- 100+ years of aerospace related research

Broad S&T Mission Space – Diverse Core Resources

AFRL

Traditional Funding Categories

Add'l Funding Categories

PE 6.1
Basic Research

Science Knowledge

Greater knowledge or understanding fundamental aspects

Observable facts

Without specific applications toward processes or products

New Science

~$450M

PE 6.2
Applied Research

Competencies/Technologies

Applying knowledge or understanding to determine the means by which a recognized and specific need may be met

Workforce salaries $~650M

Science to Application

~$1,300 M

PE6.3
Advanced Technology Development

Capability Concepts

The development and integration of hardware for field experiments and test

From Lab to Field

From Application to Capability

~$800M

SDPE

PE 6.4
Operational Experimentation and Prototyping

Assess military utility and benefit of emerging technologies & TTPs

Testing in real environment

Tech Transition Plans

Experimentation

~$150M

AFWERX / SPACEWRX

Executive Agent (DPA Title III)

Others

~$1,500M

DAF RDTE Appropriations ~$50B (AFRL <10%). Multiple 'colors' of money and 'owners'

Near, mid, far term mission drivers

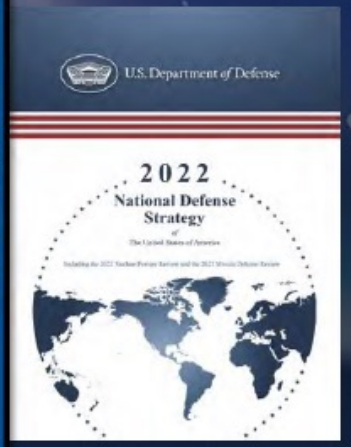
Many customers demands (MAJCOMs, COCOMs, PEOs, DAF Futures, Larger S&T ecosystem, …)

Strategic Drivers

AFRL

2022 National Security Strategy

2022 National Defense Strategy



OSD Critical Technology Areas

S&T 2030

Functional Technology Enablers

- Sensing
- Sense-Making
- Command, Control, and Communications
- Platforms
- Weapons
- Resilient Basing
- Readiness
- EMSO/Nuclear
- Basic Research

Operational Imperatives & Cross-Cutting Operational Enablers

SPACE ORDER OF BATTLE

ABMS / JADC2

AIR, GROUND, AND SEA SURFACE MOVING TARGET ENGAGEMENT

NGAD FAMILY OF SYSTEMS

RESILIENT FORWARD BASING

B-21 FAMILY OF SYSTEMS

READINESS TO MOBILIZE, DEPLOY, AND FIGHT

ELECTROMAGNETIC SPECTRUM OPERATIONS

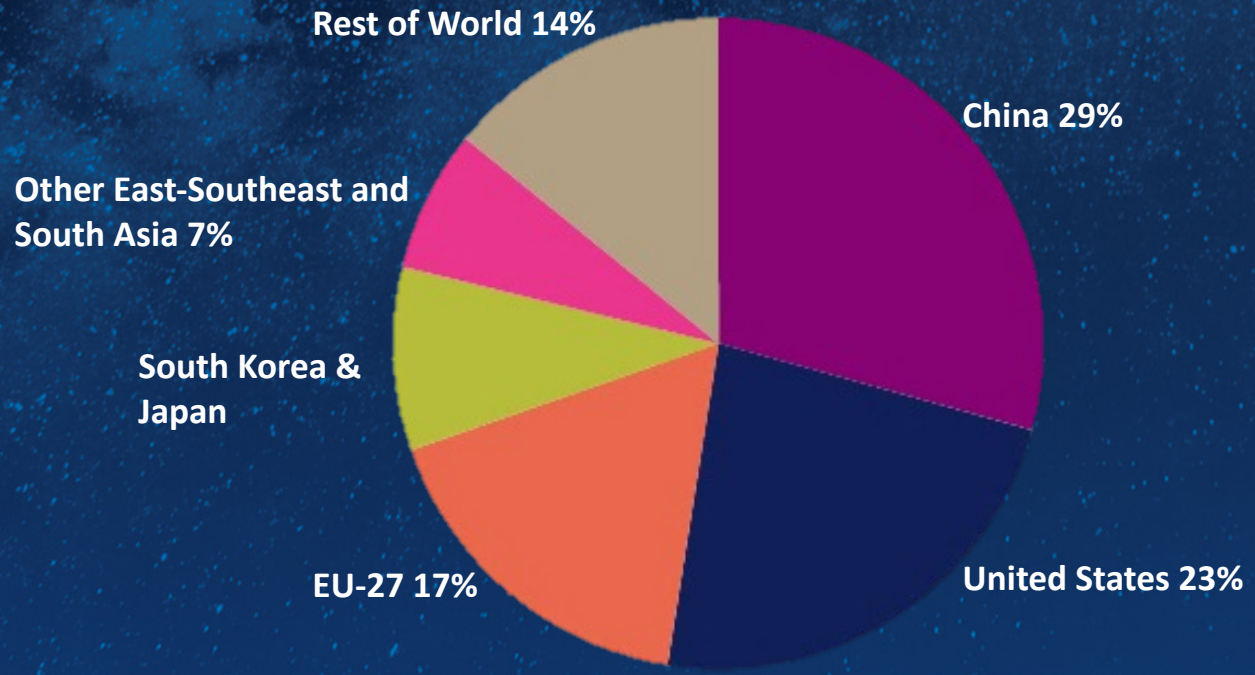
MOBILITY

WEAPONS

State of U.S. Science and Engineering

AFRL

The global concentration of R&D funding continues to shift from the United States and Europe to countries in East-Southeast Asia and South Asia.



This can effect our national security!

The New Pace

AFRL

The need for SPEED!

BUT. . .

Science

≠

Technology

Research

≠

Development

Partnering with AFRL

For more information, visit AFRESEARCHLAB.COM

UNIVERSITY RESEARCHERS

- Air Force Office of Scientific Research Grants
- International (WOS, PAs)
- AFRL Regional Hub Network
- Partnerships (EPAs)
- Workforce Development (COEs, ML-RCP)

Keyword search: AFOSR Funding Opportunities, National Science Foundation (NSF), NSF-DMREF, Minority Leader Research Collaboration Program

- Department of the Air Force Challenge
- AFRL Maker Hub
- AFWERX Spark Program
- AFRL CC's Challenge
- Interagency (NSF, NIST)
- Reliance 21
- International (TTCP)

https://afresearchlab.com/partner-with-us/government/

GOVT USERS

Integrating National S&T Innovation

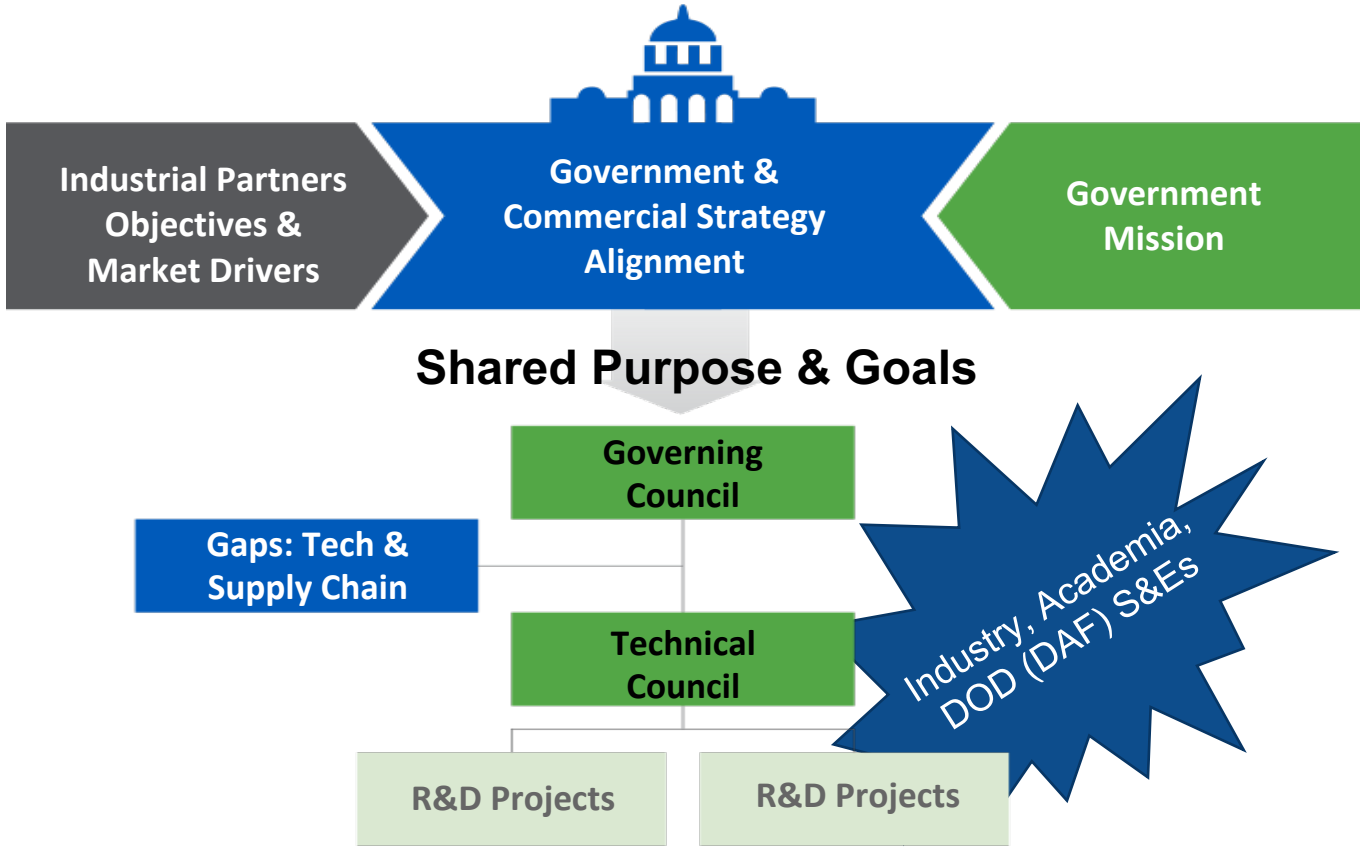
- Tech Accelerators
- IP Licensing
- AFRL Regional Hub Network
- Open Innovation Challenges
- Small Business Innovation Research (SBIR)
- AFRL's Innovation Institutions

https://afresearchlab.com/partner-with-us/business/
https://www.afsbirsttr.af.mil/ https://www.sbir.gov/

- AFRL Innovation Institutes
- AFRL Regional Hub Network
- AFWERX, SpaceWERX
- AFVentures
- Open Solicitations
- beta.sam.gov
- Defense Innovation Marketplace

https://afresearchlab.com/partner-with-us/business/
https://defenseinnovationmarketplace.dtic.mil/industry-portal/

The Public-Private Partnership (P3) Model for R&D



Cooperative Agreement: (DoDGARs)	"support a public purpose" "substantial staff involvement from a federal agency"

Outcomes

Advance the Ecosystem

- Road-Mapping
- Collaboration & Networks
- Resources (Databases, Standards & Practices)
- Create Markets (Stakeholders-2-Innovations)

Pre-Competitive Risk Reduction & Assessment

- Techniques, Approaches, Shared Tools
- Product Exploration
- Supply Chain Development

Workforce Development

- Professional
- Production & Manufacturing

DoD Transition ("Dual Utilization")

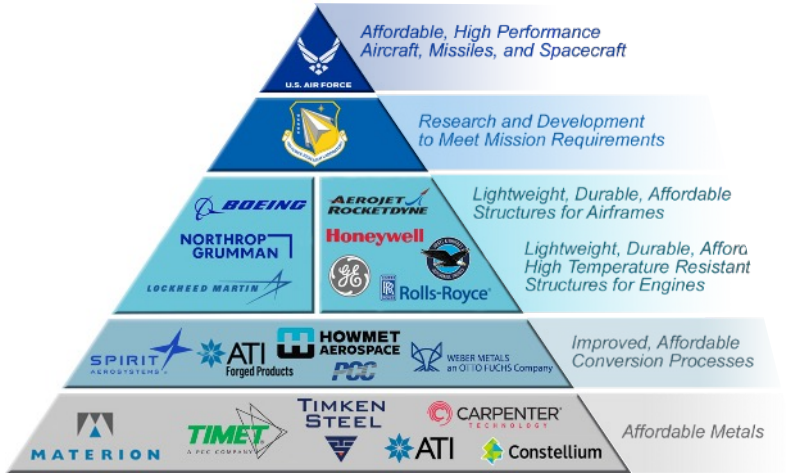
- Developing National Validated Databases
- Commercialize Modeling, Analysis, & Design Tools
- Standards Initiation
- Web based Tools to Help Small Businesses

NIST AMNPO circa 2012; 5th Persh Conference Report, 1 Nov 2013

Example AFRL P3 Cooperative Agreement Constructs for R&D

AFRL

Virtual (Tech Sector)



Physical Hub + Virtual (Tech Sector)

America Makes

AIM photonics

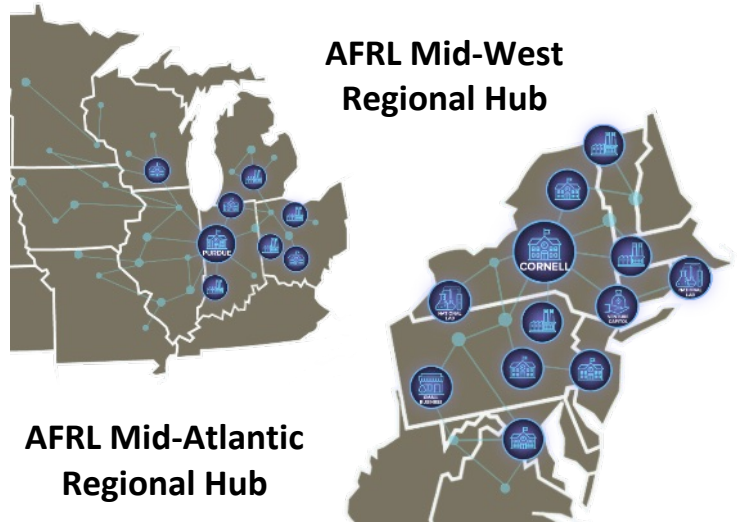
ARM ADVANCED ROBOTICS FOR MANUFACTURING

NEXTFLEX

BioMADE

M D The Digital Manufacturing Institute

Physical Regional Network (Multiple Tech Sectors)



Metals Affordability Initiative (1999)

Pre competitive, Air Force & aerospace metals supply chain (17 members) (TRL 2-5)

103 insertions into different defense systems ROI of over $1.86 B

(Military (CII): $1,175 M; Dual-Use: $690 M)

Manufacturing USA (MIIs) (2012)

Pre-competitive, manufacturing technology & supply chain creation (MRL 3-5)

1,590+ companies, universities, and non-profit members or partners

Committed Funding: $1.5B+ Federal and $2.1B+ Private/State Government Investment

AFRL Regional Hubs (2022)

Accelerate translation via convergent research, in member facilities by academic-industry-government teams focused on risk reduction for commercial investment

2 Hubs, 20+ founding member nodes (academia, industry, national labs)

Private-Sector Members Benefits (Value Proposition)

- **Organized Information Dissemination with Controlled Access**
  - Descriptions and contact info of diverse membership (OEMs, tier 1s/2s, SME, community colleges, labor unions, technical societies, start ups, etc..)
  - Roadmaps, standards, best practices, etc..
  - Quarterly project updates for all active projects to members (live and recorded)
- **Relationships that would not happen Outside P3 (networking, participation in technical working groups, etc.)**
  - Demand and supply working together to drive the agenda; P3 is a neutral 3rd party
  - Association with DoD (S&Es, Future Concepts, etc.)
  - Develop community definitions, roadmap development
  - Participate in the development of industry best practices for R&D and manufacturing
  - Supply chain expansion and integration/engagement with small businesses & innovators
- **Prioritizing the Technical Agenda**
  - Participate in formulation, evaluation, and review of Project Calls,
  - Receive MRL and TRL assessments, evaluations, feedback and assistance
  - Participation in Project Calls
  - Access to Intellectual Property
  - Access to Technical Expertise
  - Access and utilize the facilities on a preferential basis

JR Russell (MII Health Assessment), NBMC, NextFlex, MMIs

- **Small Businesses get Solutions they couldn't have Afforded Otherwise**

Tiered Membership of Practioners Balances Ecosystem Creation with Technology Translation

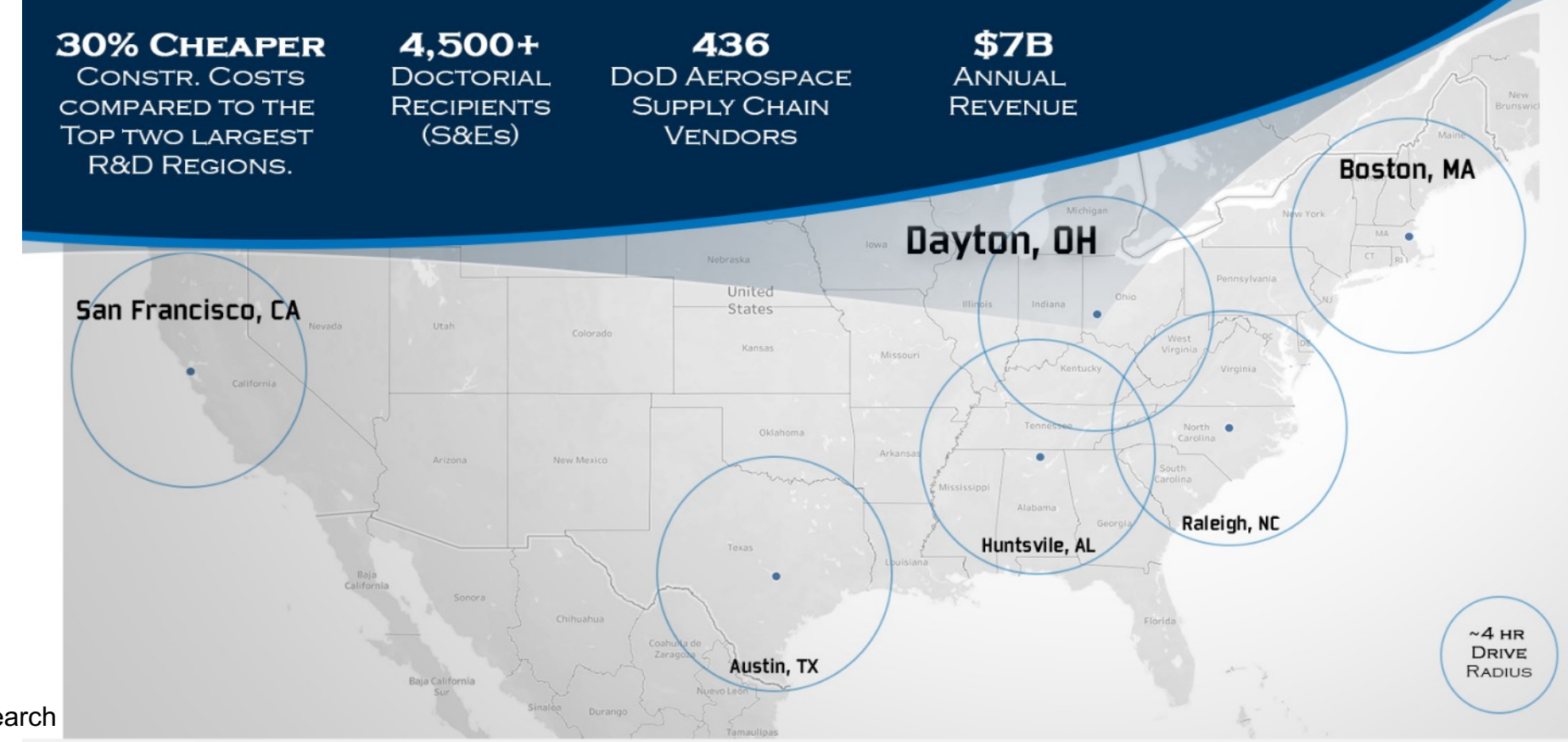
Why INVEST IN the DAYTON, OH AEROSPACE ECOSYSTEM?

30% CHEAPER CONSTR. COSTS COMPARED TO THE TOP TWO LARGEST R&D REGIONS.

4,500+ DOCTORIAL RECIPIENTS (S&Es)

436 DoD AEROSPACE SUPPLY CHAIN VENDORS

$7B ANNUAL REVENUE



Courtesy of Parallax Research

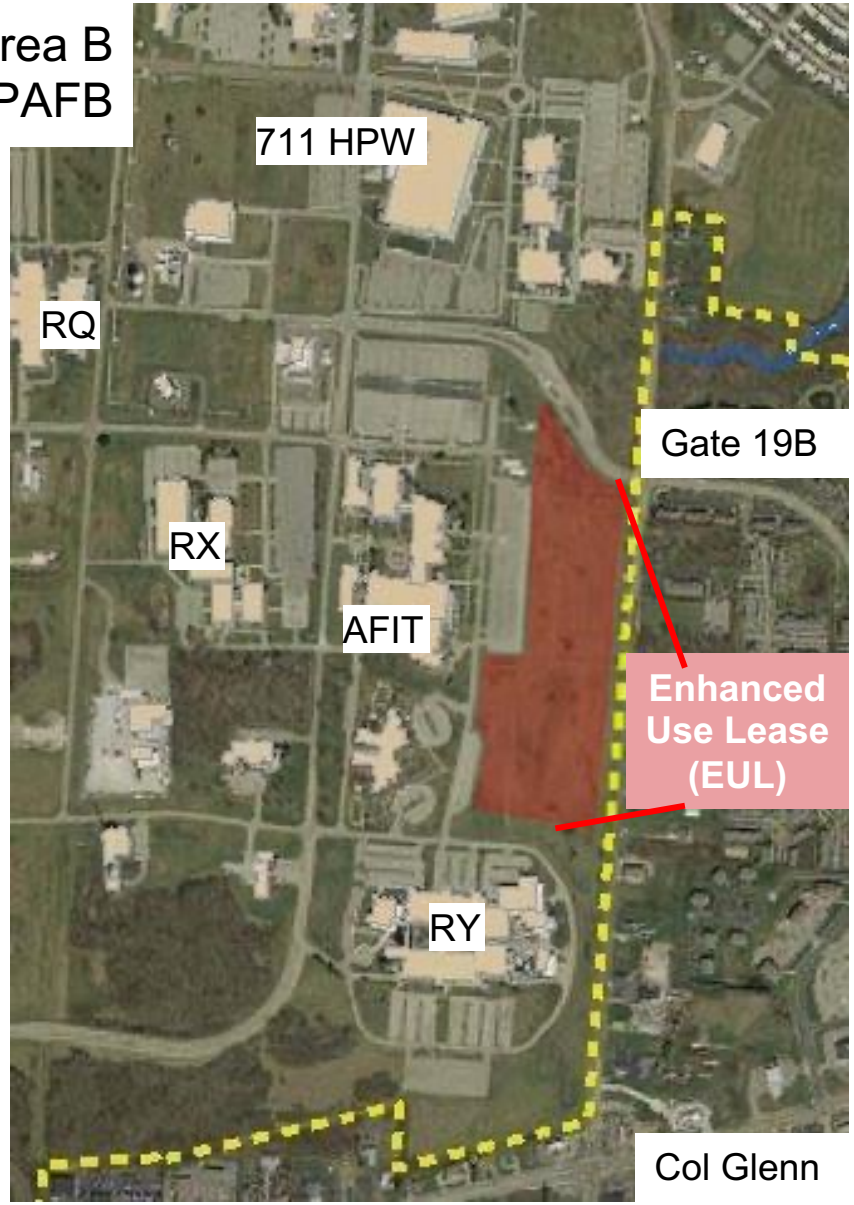
LARGEST R&D AEROSPACE REGIONS WITHIN THE U.S.

	MA	CA	OH	TX	NC	AL
Total Exp./year*	$63B	$63B	$44B	$25B	$24B	$18B
S&E PhDs*	6,000	1,500	4,500	3,000	3,000	2,400
Patents*	18K	16K	12K	10K	6K	4K
Aerospace Vendors*	554	137	436	133	141	95
Cost/SF (% +/- of Nat. AVG)**	+21%	+19%	-10%	-26%	-33%	-27%

*5 yr. average (2014-2018) Derived from NSF-NCSES
**Cost data derived from www.buildingjournal.com

U.S. AIR FORCE USSF YOU.

Hill Top Campus Concept (Handout)



Convergence

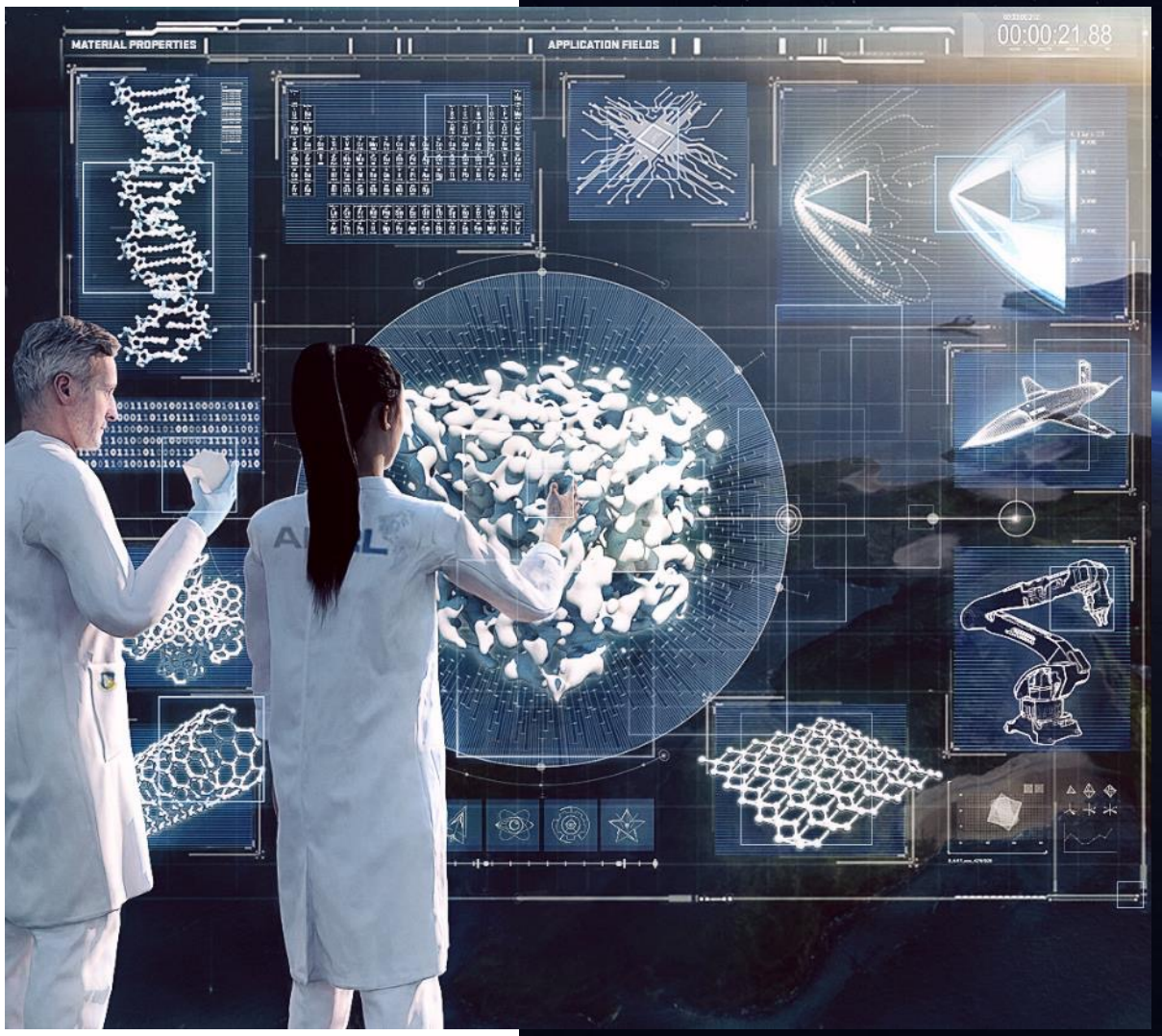
Removing barriers between siloed disciplines to fuse strengths into new technologies for the future

Nationally Leading Public & Private Scientists, Engineers & Facilities

Emerging Microelectronics
Nanotechnology
Biotechnology
Space Components
and more…

Manufacturing
Digital Engineering
Markets
Patents
Policy
and more…

P3 for Air and Space Preeminence



Invent the Stuff that Makes the Future

How to Create Relationships, Understand Needs, and Develop Partnerships with AFRL:

- Meet S&Es (conferences, collider events, Dialog Days, Ecosystem Memberships (e.g. MIIs), etc.)
- Academic Engagement (handout)
- AFRL Innovation Institutes
- AFResearchLab.com

Impactful Partnerships are Founded on Trusted Relationships

Overall Classification: UNCLASSIFIED

MISSION OVERVIEW

NASIC | NATIONAL AIR & SPACE INTELLIGENCE CENTER

NASIC is the Air and Space Intelligence Center for the nation

NASIC is the **Service Intelligence Center** for the US Air Force

NASIC is an **operational Wing** in the Air Force ISR Enterprise that reports directly to Headquarters Air Force A2/6 (Deputy Chief of Staff for Intelligence, Surveillance and Reconnaissance (ISR) and Cyber Effects Operations)


DAYTON
Inspires


THE ARCADE


AIR TECHNICAL INTELLIGENCE CENTER
AEROSPACE TECHNICAL INTELLIGENCE CENTER
FOREIGN TECHNOLOGY DIVISION
FOREIGN TECHNOLOGY CENTER
FOREIGN AEROSPACE SCIENCE & TECHNOLOGY CENTER
NATIONAL AIR INTELLIGENCE CENTER
NATIONAL AIR & SPACE INTELLIGENCE CENTER
AMC
INTELLIGENCE DIRECTORATE
T-2 AMC
1917
Foreign Data Section,
Airplane Engineering Department
1918
Technical Publications and
Library Department,
Airplane Engineering Department
1920
Technical Data Section,
Engineering Division, Army Air Services
1926
Technical Data Branch,
Materiel Division
1935
Army Aeronautical
Museum,
Materiel Division
1940
Technical Data Branch,
Materiel Division
1941
Technical Data Section, Army Air Forces Materiel Center
1942
Technical Data Laboratory, Army Air Forces Materiel Center,
Army Air Forces Air Technical Service Command
1945
T-2 Intelligence,
Air Technical Service
Command
1947
Intelligence Department, Air Materiel Command
1951
Air Technical Intelligence Center
(1125th Field Activities Group),
Directorate of Intelligence, Headquarters U.S. Air Force
1959
Aerospace Technical Intelligence Center,
Directorate of Intelligence, Headquarters U.S. Air Force
1961
Foreign Technology Division, Air Force Systems Command
1991
Air Force Foreign Technology Center, Air Force Intelligence Command
1992
Foreign Aerospace Science and
Technology Center,
Air Force Intelligence Command
1993
National Air Intelligence Center,
Air Intelligence Agency
2003
National Air and Space Intelligence Center,
Air Force Intelligence, Surveillance and
Reconnaissance Agency
2014
National Air and Space Intelligence Center,
Deputy Chief of Staff for Intelligence,
Surveillance and Reconnaissance,
Headquarters U.S. Air Force

DS Director of Staff

SC Directorate of Comms & Information

LG Directorate of Facilities & Logistics

XO Plans and Operations

DP Directorate of Personnel

FM Financial Management

SO Directorate of Security

AC Air & Cyberspace Intelligence Group

- Aircraft Analysis Sqdn
- Electronic Analysis Sqdn
- Engineering Analysis Sqdn
- Integrated C4ISR Analysis Sqdn
- Information Warfare Analysis Sqdn
- Civil Aviation Intelligence Analysis Sqdn

GS Geospatial & Signatures Intelligence Group

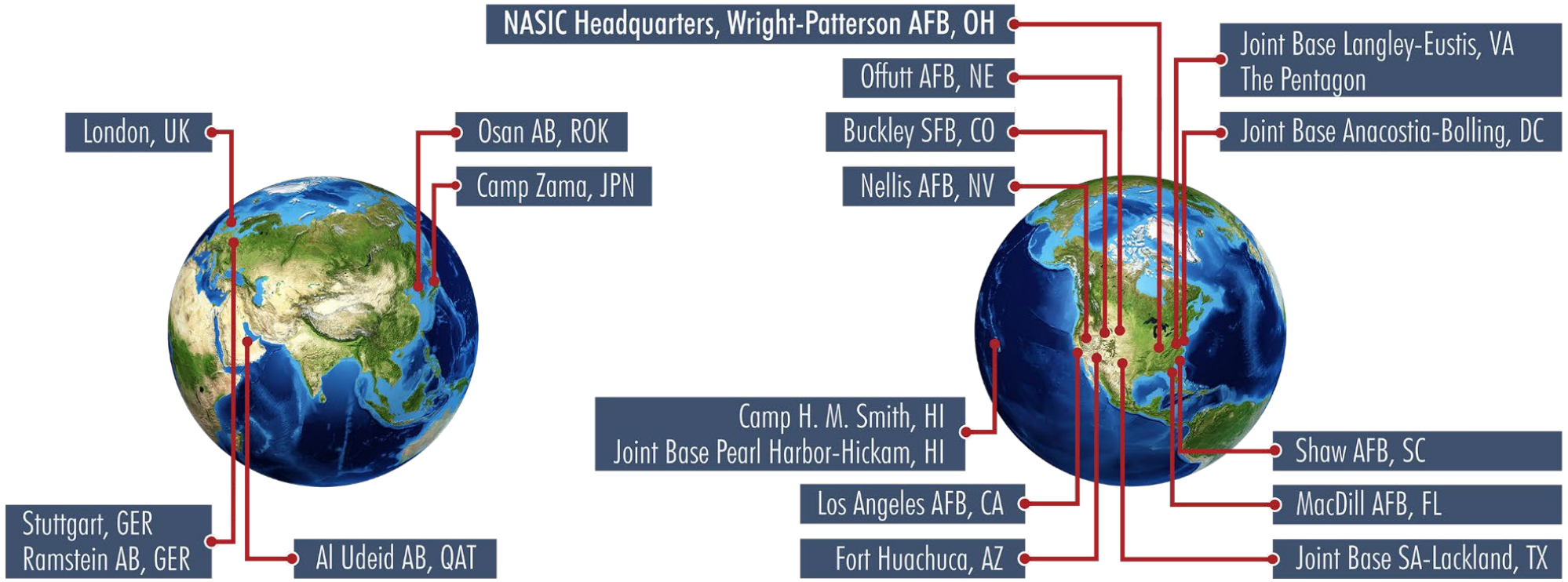
- GEOINT Analysis Sqdn
- MASINT Analysis Sqdn
- Persistent Infrared Analysis Sqdn

GX Global Exploitation Intelligence Group

- Global Activities Sqdn
- Signals Analysis Sqdn
- Information Exploitation Sqdn
- Foreign Materiel Exploitation Sqdn

SM Space, Missiles, & Forces Intelligence Group

- Future Threats Analysis Sqdn
- Ballistic Missiles Analysis Sqdn
- Regional Threats Analysis Sqdn


NASIC Headquarters, Wright-Patterson AFB, OH
Offutt AFB, NE
Buckley SFB, CO
Nellis AFB, NV
Joint Base Langley-Eustis, VA
The Pentagon
Joint Base Anacostia-Bolling, DC
London, UK
Osan AB, ROK
Camp Zama, JPN
Camp H. M. Smith, HI
Joint Base Pearl Harbor-Hickam, HI
Shaw AFB, SC
Los Angeles AFB, CA
MacDill AFB, FL
Fort Huachuca, AZ
Joint Base SA-Lackland, TX
Stuttgart, GER
Ramstein AB, GER
Al Udeid AB, QAT

TO EVEN MENTION ALL THE THINGS
THE BIRD MUST DO
TO CONSTANTLY KEEP IN
MIND IN ORDER TO FLY SECURELY
THROUGH THE AIR
WOULD TAKE A CONSIDERABLE
PART OF THE EVENING.

- Wilbur Wright

The Air Force's legacy began long before the establishment of our service, it began with a dream by two brothers from Dayton.

- General Brown, CSAF, 19 September 2022

NASIC

APEX

ACADEMIC PARTNERSHIP ENGAGEMENT EXPERIMENT

https://apex-innovates.org/

A program of

Parallax ADVANCED RESEARCH

Opportunities within the Department of the Air Force

January 2023

APEX is an effort sponsored in whole or in part by the Air Force Research Laboratory, DAF, under Memorandum of Understanding/Partnership Intermediary Agreement No FA8650-19-3-9341. The U.S. Government is authorized to reproduce and distribute reprints for Governmental purposes notwithstanding any copyright notation thereon. APEX is a program of Parallax Advanced Research.

SBIR/STTR SBC Eligibility

- Fewer than 500 employees in entirety
- U.S. for-profit firm at time of award
- > 50% owned by U.S. citizen(s) or PRA – individuals

or

- > 50% owned by another for-profit that is at least 50% owned and controlled by one or more individuals who are citizens or PRAs
- VC and JV ownership allowed, within size and ownership limits
- Must be technology!

STTR or SBIR?

STTR

- 30% of post-profit award must go to university/RI
- Principal Investigator (PI) can be from university or RI
- Why choose?
  - Possibly better chance for selection
  - Need university/RI resources
  - University technology is an enabler
  - Earlier stage technology

SBIR

- University can be subcontractor
- Principal Investigator (PI) must be company employee
- Why choose?
  - Maximizes $$ to the company
  - Entrepreneur unwilling to share IP
  - Technology more developed (TRL 3+)

Who participates in SBIR/STTR?

7

SBIR: Agencies with >100M$ in extramural research budgets.
SBIR set aside 3.2%

STTR: > 1B$
STTR set aside 0.45%

SBIR/STTR Primer

Since 1990 SBIR and STTR Has Resulted In:

- Over 160,000 awards
- $43 Billion in awards
- To over 15,000 firms
- 450,000 Scientist and Engineers
- Average of 10 patents/day

SBIR · STTR
America's Seed Fund

23andMe · biogen idec · iRobot · ecovative · LIFT labs · Symantec · QUALCOMM · MADE IN SPACE

Venture-like

Fast Contracting

Smaller, quicker, more numerous awards

U.S. AIR FORCE

“Changing the game” in SBIR/STTR

“What do you have that can solve a DAF problem?”

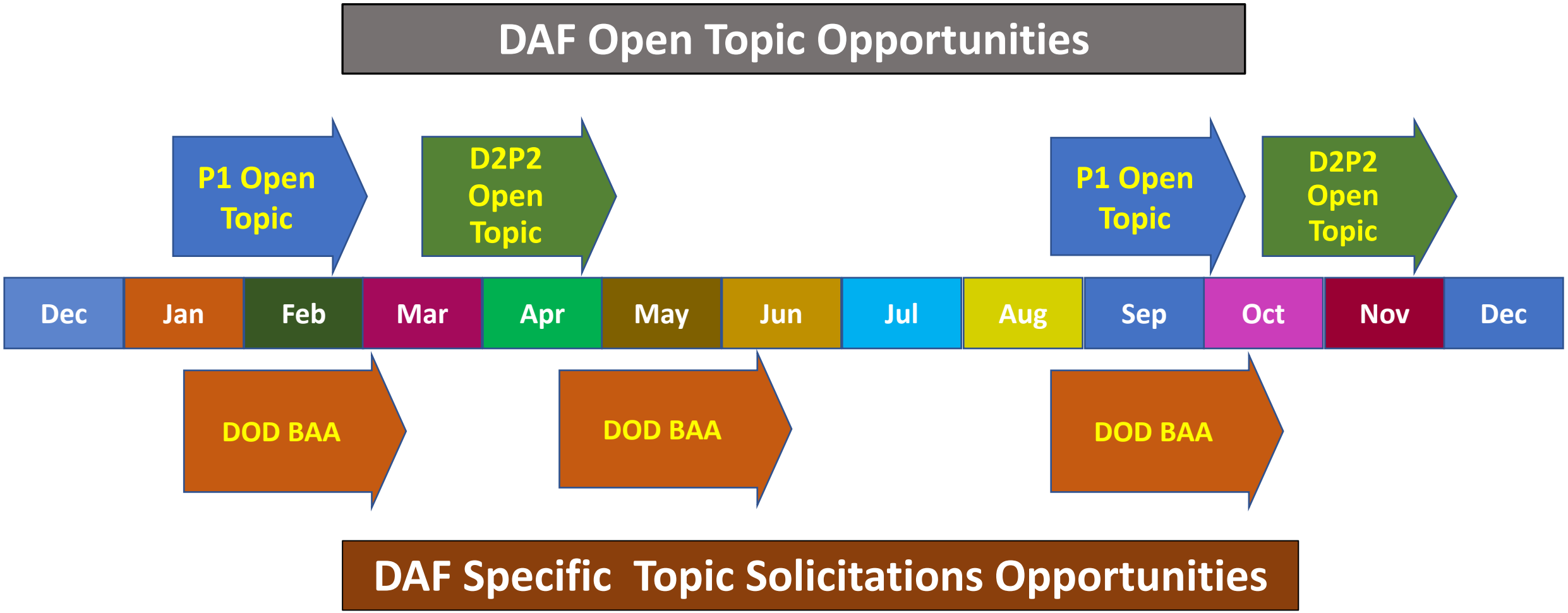
“Who might be a DAF customer? ”

“Who else can you sell it to?”

“Who else might fund you?”

“Can your team execute a product for the DAF?”

DAF Solicitation Cadence



Please note: This is for general guidance only. There will likely be changes. Check solicitations, and attend AFWERX and APEX events for more current information

DAF Proposal Opportunities

Open Topics

- Designed to allow the DAF to take advantage of the broad range U.S. innovation and entrepreneurship
- DAF focus areas, but anything that solves a DAF problem qualifies
- **Typical communication vehicle:**
  Phase 1: 25-slide deck
  D2P2 and Phase II: 15-page whitepaper
- **Phase 1:** Smaller ($75K), but more numerous
  D2P2 and Phase II: typically $1.25 M
- **Phase 1:** Pays you to find a DAF customer
  D2P2 and Phase II: Working prototype or demo

Specific Topics

- Designed to allow the DAF to request a specific solution from the entrepreneurial/ research community
- Asks proposer to answer and address a specific, defined problem
- Unlike Open Topic, Technical POC available
- **Typical communication vehicle:** 10-25-page whitepaper
  Phase 1: typically, $150-250K
  Phase II and D2P2: in range of $1.0-1.5 M
- **Phase 1:** Proving feasibility
  Phase II and D2P2: Working prototype or demo

Always refer to the solicitation for ALL of the above- things can, and often do change!

Typically includes: SBIR and STTR | Direct to Phase II (D2P2) | Air Force and Space Force

Selection Criterial: Solving a DAF problem | Technical Merit | Commercialization/Dual Use

Ultimate objective: Create a product that the DAF and others can purchase

DAF SBIR/STTR Phased Program

Phase I

Proving feasibility

Phase II

Prototype/ Demonstration

Phase II+

Enhancements

"One more thing"

STRATFI and TACFI programs offer $400K- $15 million

Requires significant investor and/or DOD funding match

Phase III

Sales to DAF & others

"the ultimate objective"

Does not use USAF SBIR/STTR funds

Contract/subcontract with DAF

Market commercialization

Can be sole sourced to SBIR/STTR awardee

Selected DAF Technology Areas of Interest

(not all-inclusive- refer to DAF documents for most current areas)

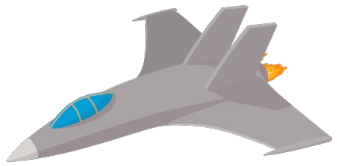
U.S. AIR FORCE

AFWERX

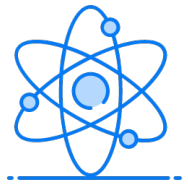
U.S. SPACE FORCE

SpaceWERX

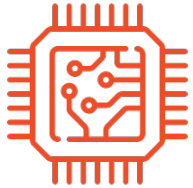
AFRL THE AIR FORCE RESEARCH LABORATORY



Hypersonics



Quantum Science

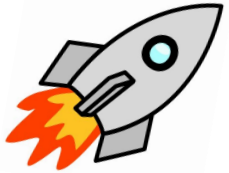


Micro-electronics

Advanced Materials

UAV technology

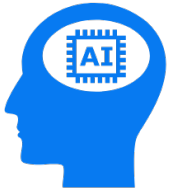
Data Security



Power/ Propulsion

Satellite Mgt

Space Debris mgt



Artificial Intelligence

Additive mfg

Robotics

Sensors

Biomedical

Human Performance

Base Mgt systems

Base Mgt Energy efficiency

Advanced Energy

Civil Engineering

Air Force and Space Force Open Topic

Summary based on:
Pre-Release version of DoD 23.1 BAA solicitation (January 11, 2023)
Pre-Release version of DoD 23.A BAA solicitation (January 11, 2023)
Pre-Release version of AF X23.5 CSO solicitation (January 12, 2023)
Pre-Release version of AF X23.D CSO solicitation (January 12, 2023)

Always check for the latest solicitation!

Solicitation	Close Date	Program	Phase	Period of Performance	Amount	Topic Description	Technical Volume Format
AF X23.D CSO	February 23	**STTR**	**Phase I**	3 months	$75 k	Open Call for Innovative Defense-Related Dual-Purpose Technologies/Solutions with a Clear Air Force or Space Force Stakeholder Need	**25 slide deck (Volume 2)** Slide TOC on pp 27-31 of solicitation includes 11 required, 6 if applicable slides, rest as you wish.
AF X23.5 CSO		**SBIR**					

Air Force Specific Topics							
Solicitation	**Close Date**	**Program**	**Phase**	**Period of Performance**	**Amount**	**Topic Description**	**Technical Volume Format**
DoD 23.A BAA	March 8	**STTR**	**Phase I**	9 months	$180 k	Hybrid biological systems/biomaterials for in-body sensing Smart Contact Lens Sensor Integrated with AI to Monitor Physiological Signals in Deployed Extreme Operational Stress Environments	20 page white paper

Air Force Specific Topics

Solicitation	Close Date	Program	Phase	Period of Performance	Amount	Topic Description	Technical Volume Format
DoD 23.1 BAA	March 8, 2023	SBIR	Phase I	9 months	$180 k	APTU Combustion Health Monitoring	20 page white paper
						High Temperature and Pressure Mass Flow Rate Measurement System for Liquid and Supercritical Phase Fluids	
						Remote Emissivity Measurement System for Spacecraft Materials Testing	
						In-Situ Bidirectional Reflectance Distribution Function (BRDF) Measurement System for Spacecraft Materials Testing	
						Imaging Spectropyrometer for Industrial Process and Hypersonic Thermal Protection System Characterization	
						Optical Interface for Bright- Source Exclusion and Threat Testing in a Cryovacuum Chamber for High Power Laser Sources	
						Cryovacuum Slip Ring for Instrumentation and Purge / Cooling Flow	
						MWIR/LWIR Detector Standards for Low-Radiometric- Power Calibration to Support Space-borne Imaging Sensor Calibration, Characterization, and Hardware-in-the-Loop Testing	
						Flight Systems Data Acquisition via Onboard Air-Gapped Communication System	
						Fiber Optic Strain Sensing with Pass-through Fiber Optic Rotary Joint	
						Hybrid Slip Ring	
						ADV MMW RAM (Advanced Millimeter-Wave Radar Absorbing Materials)	
						MIN MMW RFSoC Tech	
						Static Detection System	
						ATC Kit	
						ATC for Small CTKs	
						New Integrated ATC	
						Automated Sourcing Supply	
						FL-MSA High-Speed Connectivity	
						Toolbox MX Enabler Suite	
						MR Glasses - Aircraft MX	
						Mobile Asset Management system	
						Multi-Mission Blue UAS	
						Meshed Radar Network to Achieve Extended Coverage and Improved Performance from a Small, Lightweight, Low Power AESA for ATC in an Expeditionary Environment	
						Decentralized Command and Control of Autonomous Systems	
						Universal Neural Information Acquisition Architecture for Cognitive	

Air Force Specific Topics

Solicitation	Close Date	Program	Phase	Period of Performance	Amount	Topic Description	Technical Volume Format
DoD 23.1 BAA	March 8	SBIR	D2P2	24 months	$1.8M	FOD Retriever	50 page white paper
						Event Based Star Tracker for AFNWC Applications	15 page white paper
						Reserve, Remotely Activated Battery for Missile Guidance Set for Minuteman III ICBM	15 page white paper
						Large Format Emergency Power Batteries for Minuteman III ICBM	15 page white paper
						Reserve, Remotely Activated Battery for MK12A Reentry Vehicle for Minuteman III ICBM	15 page white paper
						Reserve, Remotely Activated Battery for MK21 Reentry Vehicle for Minuteman III ICBM	15 page white paper
						Reserve, Remotely Activated Battery for Stage 1 Flight Control Unit for Minuteman III ICBM	15 page white paper
						Digitization and Management of Authoritative Resources	15 page white paper
						AI for Systems Engineering Assessment Model (SEAM) activities	15 page white paper
						Digital Engineering Technologies	15 page white paper
						Intercontinental Ballistic Missiles (ICBM) Test Technologies	15 page white paper
						Thermal Flux Data Collection Instrument and Data Processing Methods for Concentrated Radiant Energy Beam Target Surface Thermal Exposure Characterizations	15 page white paper
						Seal Bond Removal	50 page white paper
						Zero-Trust Data Fabric for Industrial Internet of Things	50 page white paper
						Laser Paint Mapping System	50 page white paper
						Bolt Hole Eddy Current (BHEC) Signal Indication Interpretation	50 page white paper
						Improved Weather Sensor Analysis Algorithms via Machine Learning	50 page white paper
						Innovative Technology to Automatically Build/Update Required Acquisition Milestone Documentation	50 page white paper
						FARE - Fully Adaptive Radar Electronics (FARE)	50 page white paper
						RADS - RAdar Disruption Systems	50 page white paper
						HiFi - Manufacturing high fidelity full-scale wind tunnel model for next- generation air vehicle development	50 page white paper
						MagDie - Magneto-dielectric Antennas for Broadband HF Sensing	50 page white paper
						FOCUS – Future Operational Capabilities for the US	50 page white paper
						RESINATE - REmoste Sensing IN A TEu	50 page white paper
						Next-Generation Neural Interface for Real-World Performance Monitoring and Augmentation	50 page white paper
						Battle Damage Assessment Manager	50 page white paper

Space Force Specific Topics							
Solicitation	**Close Date**	**Program**	**Phase**	**Period of Performance**	**Amount**	**Topic Title**	**Technical Volume Format**
DoD 23.A BAA	March 8	**STTR**	**Phase I**	9 months	$180 k	Integrated Navigation, Communication, and Authentication	20 page white paper
DoD 23.1 BAA		**SBIR**				Cislunar Navigation	

Other DoD Components' Out-of-Cycle Topics							
Solicitation	**Close Date**	**Program**	**Phase**	**Period of Performance**	**Amount**	**Defense Component & Topics**	**Technical Volume Format**
DoD 23.4 BAA	New topics open & close more or less monthly	**SBIR**	**Phase I**	Generally 3-6 months	Generally $150 k to $250 k Varies with topic	Army Several focused topics	Generally 5-10 pages. See specific topic for details.
	January 31			3 months	$150 k	Army Open Topic Artificial Intelligence (AI)/ Machine Learning (ML)	5 page white paper + 8 slide Commercialization Plan
	March 7		**D2P2**	9-12 months Base + 12 months Option	$1.5M - $1.8M (including Option)	DARPA Three focused topics	Varies by topic White paper. May also include slide deck.

Other DoD Components' Specific Topics

Solicitation	Close Date	Program	Phase	Period of Performance	Amount	Defense Component & Topics	Technical Volume Format
DoD 23.1 BAA	March 8	SBIR	Phase I	6 months (base) + 6 months (option)	$246.5 k (Base + Option + TABA)	**Navy** 78 Focused Topics	10 pages
				12 months	$250 k	**Defense Health Agency (DHA)** 4 Focused Topics	20 pages
				12 months	$100 k or $295 k (depends on topic)	**Defense Logistics Agency (DLA)** 4 Focused Topics	20 pages
				6 months	$197 k	**Defense Microelectronics Activity (DMEA)** 8 Focused Topics	20 pages
				6 months	$155 k (includes TABA)	**Missile Defense Agency (MDA)** 6 Focused Topics	15 pages
			D2P2	24 or 36 months, depending on topic (including Option)	$1.2 or $1.3 M (including Option)	**Navy** 6 Focused Topics	30 pages
				24 months	$1.8 M	**Defense Logistics Agency (DLA)** 3 Focused Topics	60 pages
				24 months	$1.3 M	**Defense Microelectronics Activity (DMEA)** 2 Focused Topics	40 pages
DoD 23.A BAA	March 8	STTR	Phase I	6 months (base) + 6 months (option)	$246.5 k (Base + Option + TABA)	**Navy** 29 Focused Topics	10 pages
				6 months	$100 k	**Defense Logistics Agency (DLA)** 1 Focused Topic	20 pages

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