AFRL MIDATLANTIC REGIONAL HUB

Funding Program Overview and Process Detail

1. Introduction and General Information

1.1 Summer 2023 Project Submission Opens
> June 12, 2023

1.2 Summer 2023 Proposal Due Date (by 5 p.m. EST):
> July 14, 2023

1.3 Summer 2023 Proposal Presentations to Selection Committee:
> August 11, 2023

1.4 Program Contacts:
- Proposal Process/Qualifying Match Questions: Patrick Govang <pjg26@cornell.edu >
- Projects relating to Quantifying Performance in Extreme Environments:
  - Hilmar Koerner, Ph.D. (hilmar.koerner.1@us.af.mil)
  - Thomas Peng, Ph.D. (thomas.peng.3@spaceforce.mil)
- Projects relating to Complex Systems Modeling
  - Mark Linderman, Ph.D. (mark.linderman@us.af.mil)
  - Alexander Francis (falexander@bnl.gov)
  - Luke A. Baldwin, Ph.D. (luke.baldwin.1@us.af.mil)
  - Philip R. Buskohl, Ph.D. (philip.buskohl.1@us.af.mil)
- Translation Program Questions: Patrick Govang <pjg26@cornell.edu >

1.5 Proposal Submission Instructions

> Proposals may be submitted via Google Forms
> The link to the proposal application form can be found here:

https://forms.gle/Gt8wy958iS4MTk3H6

> For any issues with the application form, please contact:
> D. Michael Beeching
> Administrative Coordinator
> AFRL Mid-Atlantic Regional Research Hub
> dmb55@cornell.edu
> 607-255-7731

1.6 Budget Distribution

Each proposal to include a budget broken down by month with annual calendar year totals for project periods that extend through multiple calendar years, aligned with proposed project milestones and to include a summary of all costs, including lead proposing member organizational and any subcontractor overhead costs.

Matching requirements vary depending on desired funding path are not to be confused with contractual cost-share requirements. Translating technologies into market applications typically requires funds beyond the capabilities of this funding program. Noting all matching funds will benefit your proposal. Please see item 6 for further information.

1.7 Award Types

Prototyping Research Innovation Awards:
Subcontract from Cornell University Office of Sponsored Programs to PI organization and, if applicable, sub-contracts for funding to member collaborators.

Accelerating Translation Awards:
Subcontract from Cornell University to Hub member administrating program.

1.8 Estimated Number of Awards and Anticipated Funding Amounts:

The Hub plans three proposal cycles per year, nominally in the Spring, Summer, and Fall. Specific dates for each proposal cycle will be communicated to the Hub community prior.

The award selection process is prioritized first by proposal quality and Hub mission alignment followed by the availability of funds. The selection committee may allocate funding recommendations in any cycle to any proposals at any stage in any amount based on project alignment with hub goals and quality of proposal.

Approximate Funding Available per Cycle:

Prototyping Research Innovation Awards:
Phase 1: $100,000; budget 4 awards per cycle
Phase 2: $200,000 budget 2 awards per cycle
Phase 3: $200,000 budget 1 award per cycle

Accelerating Translation Awards:
Phase 1: $50,000; budget 2 awards per cycle
Phase 2: $150,000 budget 1 award per cycle
Phase 3: $250,000 budget 1 award per cycle

1.9 Who May Submit Proposals and Serve as PI:

Proposals are to be submitted by members of the Mid-Atlantic Hub Network; however, only members within the Mid-Atlantic region may serve as PIs/proposal leads. See section 1.9 for specific membership options and location criteria.

All Proposals require a co-PI from the AF/SF. Hub community members preparing proposals without an AF/SF co-PI or AF/SF PI's are encouraged to leverage the Tech Connect function on the. Mid-Atlantic Hub Network website to identify (co-)PI's as necessary:
https://www.midatlantichub.afresearchlab.com/find-an-afrl-collaborator

There is a limit of one proposal per PI per cycle. As projects are competitively and progressively funded through the partnering types and phases, the PI and/or co-PI may change from Phase to Phase.

All PI and proposal team members to comply with:

6.010 EXPORT CONTROL (NOV 1999) (TAILORED)
(a) Access to the technology developed under this agreement by foreign firms, institutions or individuals shall be controlled by the recipient under applicable U.S. export control laws.
(b) If required under a Research Project Plan agreed to in writing in advance by the Recipient, the Recipient shall obtain Grants Officer approval before assigning or granting access to any work, equipment, or technical data generated or delivered under this agreement to foreign persons or their representatives. The notification shall include the name and country of origin of the foreign person or representative, the specific work, equipment, or data to which the person will have access. The Grants Officer will not provide approval until a favorable Foreign Disclosure Office determination is received.

1.10 Hub Network Membership

The Mid-Atlantic Hub Network membership program offers multiple membership options to accommodate corporations (modest fee based on sales), startups (modest fee based on amount raised), investment groups (modest fee), academia, not-for-profits and government organizations. There is no fee for academia, not-for-profits, and government organizations, however, they agree to serve as Hub Network communication nodes throughout the region. The

Network's region extends from Maine to Virginia, with the western boundary extending along New York, Pennsylvania, West Virginia, and Virginia.

Interested parties from outside of the Network region, may join, however, they are not eligible to lead proposals and cannot sit on Mid-Atlantic Hub Network committees.

Membership benefits:
- Propose (lead, in-region members only) and/or participate in Hub partnership project calls
- Concierge support for networking with AFRL and Hub Network
- Access to Hub-funded translation projects, AFRL S&T staff
- 3 entries to Hub-wide meetings
- No Intellectual Property terms or conditions associated with membership

Membership Fees:

Regional Corporate Member: Membership fee based on annual sales:
- $250 for sales <$10M
- $1,000 for sales between $10M - $50M
- $2,500 for sales between $50M - $100M
- $5,000 for sales greater than $100M

Regional Startup Companies & Investors
For Startups fee based on all funding raised or awarded:
- $0 raised or awarded less than $1M
- $250 raised or awarded between $1M - $5M
- $1,000 raised or awarded between $5M - $50M
- $2,500 raised or awarded greater than $50M

For all investor groups (angel, seed, VC):
- $1,000 Investor Groups

Academic Membership:
No fee, however, signature of Hub MOU detailing:
- Marketing obligations to external and internal communities
- Grant unrestricted, royalty-free access to pre-existing intellectual property when the subject of the Hub's funding programs.
- Alignment of entrepreneurship, commercialization, and related programs with
- Support Hub events and attend meetings

Government Partners and Not-for-Profits (includes DoD procurement agencies)
- Signature of government member MOU in addition to:
  - Marketing to internal community

- o Grant unrestricted, royalty-free access to pre-existing intellectual property when the subject of the Hub's funding programs.
- o Support Hub events and meetings

The link to the membership application form for all membership types can be found here:

https://www.midatlantichub.afresearchlab.com/hub-network-membership

2. Proposal Process; Conflict of Interest Management

Proposals will be accepted, reviewed, and recommended for awards in 8-week cycles three times per year, nominally in the Spring, Summer and Fall. Proposals submitted during the current solicitation will follow an approximate timeline:

Week 1:   Proposal submissions open;
During this time any projects seeking to align with required Hub resources for proposals are encouraged to contact Hub staff for networking and introductions.

Week 4:   All proposals due

Weeks 5-7:   Internal proposal alignment review and feedback; Hub personnel will also seek external reviews when possible.

Week 8:   Proposal Presentations to Award Committee
Award Committee recommends projects for funding to AFRL POC
AFRL POC subsequently approves funding

A 9-person Award Committee, selected by the AFRL Mid-Atlantic Hub Network Executive Advisory Team, will be formed for each cycle based on appointments to the following roles:
- 3 Members of the Hub Executive Advisory Team
- 2 Ad-Hoc members from the AFRL Hub Community
- 2 AFRL S&T members not affiliated with the Hub
- 2 Investment or Corporate Representatives

The Hub Executive Operating Team is responsible for open communications regarding Award Committee appointments and ensuring any potential conflicts are identified, managed and, when possible, avoided. Should any Hub member have a concern about the process, management of conflicts or lack thereof, an independent arbitrator(s) will be appointed by Name Forthcoming who will review all concerns and make recommendations for corrective action.

3. Program Overview

The Hub's funding program supports **research-focused innovations on prototyping activity and/or acceleration into the marketplace**.

Proposals must be structured around achievable milestones at 6- or 12-month (maximum) timelines. Phased funding for future milestones will be either via subsequent funding cycle applications and based on successful completion of the previous or active milestones.

Prototyping and acceleration projects should align with the Hub's main research thrusts and any requested topics thereunder. Requested sub-topics of interest align with planned, future topics for the AFRL SBIR/STTR funding program.

Quantifying Performance in Extreme Environments: Proposals in this domain should focus on technologies that assess structural and functional materials such as metallic alloys and polymer-based composites during the extreme conditions

Summer 2023 Sub-Topics of Interest: (future SBIR/STTR program relevance)
- Development of New Oxidation Resistant Refractory Alloys for Additively Manufactured (AM) Components
- Advanced Nano-Composite Radiation Shielding Manufacturing
- Materials for High-Temperature Performance Electronics: Memory and Packaging

Complex Systems Modeling: Proposals under this domain should focus on enabling intelligent automation and optimal decision support for complex adaptive systems by creating novel capabilities for scalable learning of AI and ML models and policies that can achieve the desired operational goals under uncertainty.

Summer 2023 Sub-Topics of Interest: (future SBIR/STTR program relevance)

- Precision Eye Tracking for Remote Pilots and Training Optimization

Edge Computing: -2023 Pilot- Proposals under this domain should focus on edge computing.

Summer 2023 Sub-Topics of Interest: (future SBIR/STTR program relevance)

- Low-Loss Magnetless Optical Isolators for Quantum Integrated Photonics Applications

3.1 Prototyping Research Innovations Project Funding:

This funding applies to the creation and refinement of commercially viable/validated prototypes or to establish technical capability for a market application. It is intended to compliment previously funded research efforts that have progressed to realize innovations with commercial potential and application in the AF/SF. The identification of Intellectual Property, or near-term plan to protect Intellectual Property is required for Phase 1 consideration. Identified and protected Intellectual Property is required for Phase 2 and 3 awards.

Phase:	Timeframe	Funding (up to)	Match	IP Status	Requirements:
1	3-6 months	$100K	Preferred; increases odds	Pre-IP path identified /Disclosed/IP Protected and available	Hub PI AFRL Co-PI
2	6-12 months	$200K	100% Match	IP Identified, Protected and available	Hub PI AFRL Co-PI
3	6-12 months	$200K	100% Match	IP Identified, Protected and available	Invite only after successful completion of Phase 1 or 2. Hub PI AFRL Co-PI

Project teams who feel they better align with Phase 2 requirements (Identified and protected IP) may apply for Phase 2 funding.

Project teams who have successfully completed a Phase 2 project may be invited by the Hub to apply for Phase 3 funding.

3.2 Accelerating Translation Proposals:

Phase 1 and 2 project funding is intended to leverage and fund participation in academic hub member translation and educational programs designed to engage students and resources to help refine, align and launch commercially viable innovations. PIs are interested in applying for this funding should contact Patrick Govang <pjg26@cornell.edu > prior to applying.

Phase 3 project funding is intended to support a licensed Start-up company or licensee seeking to accelerate a licensed innovation into the marketplace.

Phase	Timeframe	Funding (up to)	Typical Activity	IP Status	Requirements
1	Semester-long	$50K	I-Corps/ Market Fit Studies	Pre-IP	AFRL Co-PI, Hub Member Program
2	6-12 months	$150K	Entrepreneurship Fellow, Supply Chain Dev Incubator Support	IP Protected	AFRL Co-PI, Hub Member Program
3	6-12 months	$250K	Startup : Match Licensee: Match	IP Licensed	AFRL Sponsor, License and 100% match

4.0 Proposal Preparation Instructions:

All proposal components below are to be submitted via the AFRL portal.

Proposal Components:

4.1 Project Title

4.2 Period of Performance: MM YYYY to MM YYYY

4.3 Identification of PI and Co-PI (AFRL POC):

Project Lead:	Organization Name	**AFRL Partner:**	AFRL Directorate/Branch

Principal Investigator: (Technical lead)	**AFRL POC:**
Name	Name
Title	Title
Organization	Organization
Address	Address
Phone	Phone

Email	Email
DUNS #: (if applicable)	

4.4 Funding Type Requested: (Check All that Apply for Cycle)

chk	**Prototyping Research Innovations**	chk	**Accelerating Translation**
	Phase 1: up to $100k		Phase 1: up to $50K
	Phase 2: up to $200K		Phase 2: up to $150K
	Phase 3: up to $200K (invite only)		Phase 3: up to $250K

Please check relevant subtopic, if applicable:

Chk	Subtopic:
	Development of New Oxidation Resistant Refractory Alloys for Additively Manufactured (AM) Components
	Advanced Nano-Composite Radiation Shielding Manufacturing
	Materials for High-Temperature Performance Electronics: Memory and Packaging
	Precision Eye Tracking for Remote Pilots and Training Optimization
	Low-Loss Magnetless Optical Isolators for Quantum Integrated Photonics Applications

Project Team

Cross regional collaborations are encouraged. Please list any proposal collaborators and their requested funding/subcontract amount:

Name	Title	Organization	Email	Subcontract Required?	Subcontract Amount

4.5 Executive Summary (200 Words)

This section should contain a top-level summary of the problem to be solved and potential impact; identify the cohort members; the technical solution, prototype or program to be pursued; the metrics to be tracked; the major deliverable or major milestones; and the total budget for the project. This section should explain the basics of the WHAT, WHY, and HOW for the project. If you are completing an existing award and applying for follow-on funding, please include a description of progress towards previously defined milestones.

4.6 Technical Plan/Scope (500 Words)

In this section and the following subsections please describe in detail the Technical Plan for the project, including Objectives, Tasks, Resource Requirements and/or other tasks as appropriate.

OBJECTIVES: Detailed objectives of the research. Identify all cohort members and their expected contributions/activities. Expand on the executive summary.

HUB RESOURCES: Identify any Hub resources required for this activity including estimates of lab space, office space, supplies/materials and any unique equipment/facilities that are a part of the hub.

AFRL RESOURCES: Identify any AFRL resources required for this program including access to AFRL facilities, Government Furnished Property (GFP), etc.

PROJECT METRICS AND MILESTONES: Identify the project metrics and milestones. Project metrics should clearly reflect the status of project activities as they contribute to the milestones. If you are completing an existing award and applying for follow-on funding, please reference your previously-funded project objectives, metrics and milestones including progress towards each and how they correlate with your new, proposed objectives, metrics and milestones.

If any controlled technology, materials, or other information are determined to be part of this Research Project, describe with specificity how such will be protected from unauthorized access or transfer during the term of the Research Project, including the arrangements for physical and network separation from unauthorized persons.

The Parties shall consult one another concerning any planned Publication of Research Project progress and Results with respect to Article RIK-7001 of the Cooperative Agreement and also with respect to Air Forces assessment of national security risk inherent to publication of progress or all or any part of the results. Such risk assessment shall include publication for purposes of prosecuting any Patent under this Award. The Parties shall strive in good faith to find mutually acceptable methods to mitigate any Air Force-identified national security risk, but if mutual agreement cannot be reached, the national security risk determination by Air Force shall control publication.

4.7 Tech Transition Plan (200 Words)

Briefly describe market targets for tech transition, possibly including but not limited to: AFRL applications, commercial products, startup business, corporate collaborators/customers/licensees, etc. Provide any feedback from the market targets that could indicate future potential.

Identification of Hub member translation, entrepreneurial or commercialization programs utilized or planned.

If you are completing an existing award and applying for follow-on funding, please reference your previously funded tech transition plan and how it correlates with your new, proposed tech transition plan.

4.8 Deliverables/Milestones (Table)

Proposals must be structured around achievable milestones at 6-, 12-, and/or 18-month (maximum) timelines. Milestones outside of the proposal scope will help the award committee understand how potential subsequent funding cycles would progress the effort to realize the overall goals of the Hub.

If you are completing an existing award and applying for follow-on funding, please reference your previously funded project milestones including progress towards each and how they correlate with your new, proposed milestones.

Please include a table of the project deliverables/milestones described in the Technical Plan, start dates and the expected delivery date for each milestone. Column headers should be in ALL CAPS and **bold.** (Milestones in table are examples, not required)

MILESTONES	START DATE	DELIVERY DATE
Complete Phase 1 Prototype		
Complete Prototype Testing		
Complete comparison report of test results to ultimate market need		

4.9 Budget Distribution (Hub Template)

Each proposal to include a budget broken down by month with annual calendar year totals for project periods that extend through multiple calendar years, aligned with proposed project milestones and to include a summary of all costs, including overhead costs.

All proposals are required to use the Hub budget template. Please request a copy of the Hub's budget template from Mike Beeching at dmb55@cornell.edu

Example Budget Cost Items: Salaries and Wages; Employee Benefits; Equipment; Fabricated Equipment; Communications; Travel; Repair and Maintenance; Academic and/or User Fees; Consultants; Subcontracts; Supplies and Materials; Conferences and Seminars; Publications; Facilities and Administrative Costs

Matching requirements vary depending on desired funding path are not to be confused with contractual cost-share requirements. Translating technologies into market applications typically requires funds beyond the capabilities of this funding program. Identifying all matching funds will benefit your proposal. Please see Item 6 of this solicitation for specific cost sharing requirements and definition.

4.10 Intellectual Property (200 Words plus Table)

Intellectual Property (IP) developed under this project will be subject to the IP Framework in Item 5 below. Applications should include any relevant information per the descriptions below.

DATA: Please specify a detailed description of the Data to be provided by Air Force or Hub Community Partner, and specifically whether any of the Data is subject to any terms or conditions:

SOFTWARE: Please list any software owned or managed by the Air Force or Hub Community partners.

Include Third Party or Open License (open source or non-commercial research use license) to be used (and applicable licenses): If the principal basis of this Project is Software, please list any Anticipated Open License(s) (open source or non-commercial research use license) for Software developed under the Project:

BACKGROUND IP: Please specify any Background IP of any Party to be used in the performance of the Project.

AIR FORCE patents and patent applications, please complete and upload the following table identifying any AFRL IP used in the performance of the Project:

Case #	Country	App Title	Serial Number	Filing Date

Hub Community Partner patents and patent applications, please <u>provide one Section for each Hub Partner with contributing IP]</u>

Case #	Country	App Title	Serial Number	Filing Date

4.11 Proposal Presentation

PI or team member is able to attend proposal cycle presentations to Award Committee:
   a) In person (strongly preferred)
   b) Virtual
   c) Not able to attend

4.12 Additional Items

RESEARCH PROTECTIONS: When completing the application form you will need to elect one of the descriptions below. This Research Project is:

   a) Fundamental Research as defined by ITAR/EAR. Program protection measures may apply, but do not affect this fundamental research determination.

b) NOT Fundamental Research as defined by ITAR/EAR, and program protection measures will apply. NOTE: Checking this box serves as prior written notice to participating academic institutions by Air Force that the research activities under this Detailed Research Plan are not fundamental research, and execution by the parties serves as their express agreement to the terms of this non-fundamental Research Project.

Note: Per this definition, Fundamental Research includes both basic and applied research. Should not be confused as being limited to basic research only.

Special Instructions (up to 200 Words)

Clearly define any ITAR or other restrictions, Program Classification, Place of Performance, Human Research, Special Requirements/Constraints, or other special instructions/ requests/questions in this section.

5.0 Review Process and Criteria

5.1 Initial Application Review

All applications will be evaluated for completeness and alignment to proposal requirements by Hub Staff. Proposal components such as intellectual property, matching, proposal team composition, etc. Noncompliant or incomplete applications will be returned to the submitters.

5.2 Award Committee Review

The composition of the 9-person Award Committee will be addressed per cycle based on appointments to the following roles:
Selected by the Hub Executive Operating Team
- 3 Members of the Hub Executive Operating Team
- 2 Ad-Hoc members from the AFRL Hub Community
- 2 AFRL S&T members not affiliated with the Hub
- 2 Investment or Corporate Representatives

Compliant proposals may be allocated a time slot at the Annual Meeting for a presentation to the Award Committee that will address the following:

1: Project Title, Key Team, Funding Type and Amount Requested, Project Period.
2: Brief Summary of the Technology Proposed
3: Market Needs Addressed for AF and Commercial Applications
4: Current Status and Specific Needs to be addressed; Milestones

5: Anticipated Impact of Proposed Project on Commercialization/Investment

Based on the submitted proposal, presentation and feedback, the Award Committee will determine and recommend funding candidates to the AFRL for final approval.

5.3 Review Criteria

The Award Committee will make funding recommendations based on the strength of the application to the specific type of funding being requested. Generally, however, the committee will rank all proposals to the following criteria:

Technology Significance: **Does it align with AFRL Needs?** **Strength of Research Heritage.**

Impact / Size of the market for this technology (considering startup or licensing opportunity)
    a) **For AFRL**
    b) **For Commercial Applications**

Market feedback (afrl interest, company interest, entrepreneur interest, etc.)
How significant is the competitive advantage of this approach
Strength of the IP that has being created or can be improved
Milestones: quality, achievable, meaningful
Commercialization Are there clear next steps to determine commercialization path?
Future Funding Potential: does achieving the milestones successfully position the project for additional funding from the Hub?

6.0 Matching

Matching requests vary depending on desired funding path are not to be confused with contractual cost-share requirements. Translating technologies into market applications typically requires funds beyond the capabilities of this funding program. Identifying all matching funds will benefit your proposal.

6.1 For Phase 1 Prototyping Research proposals and Phase 1 & 2 Accelerating Translation proposals, identification of matching funds is voluntary and encouraged. Likely to positively factor into the proposal review process.

6.2 For Phase 2 and Phase 3 Prototyping Research proposals and Phase 3 Accelerating Translation proposals, provide a description of matching funds equal or greater to the requested funding amount

7.0 Post Award

Successful PI's will be notified by the Hub once proposals recommended by the selection committee for funding are approved by the AFRL. For awards outside of Cornell, Hub staff or representatives will initiate the subcontracting process. For awards inside of Cornell, PI's will execute the internal Memorandum of Agreement within 30 days of notification of Award. Memberships of all project participants are required to be current prior to receiving project funding.

PI's are obligated to provide project status updates upon request from the AFRL Hub and participate and present, when invited, in open Hub meetings while their project active.

A Final Technical Report to be submitted to the Program Manager within 30 days of completion of the project.

A Final Financial Report to be submitted to the Program Manager within 30 days of completion of the project.