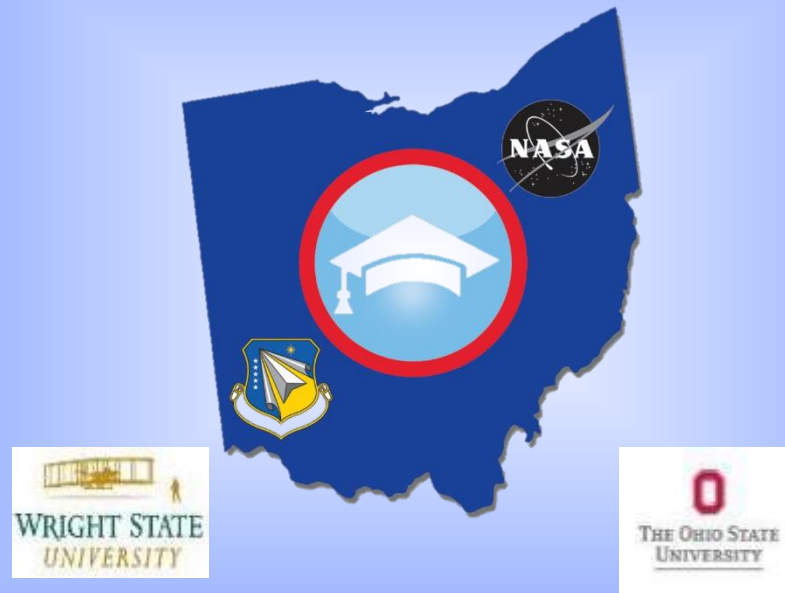


Ohio Federal and Military Jobs Commission (OFMJC) Support

Ohio Federal Research Network (OFRN) Improving Ohio's Economy Through R&D



WSU - Dennis Andersh

OSU - Marty Kress

<https://ohiofrn.org/>



Ohio Federal Research Network (OFRN) \$31.9M of State Funding Total for FY16-19

Growing Ohio's Economy by Leveraging Research and Development

\$350 million in new federal research contracts over five years

WPAFB/NASA Glenn Priorities

AFRL

- Human Performance/ Health Sciences
- Hypersonics
- Directed Energy Weapons (Lasers)
- Autonomy
- C4ISR
- LVC
- Materials/ Manufacturing
- Propulsion

Naval Medical Research Unit

- Human performance
- Human physiology
- Manned /Unmanned Aeromedical Ops
- Toxicology
- Risk assessment





NASA Glenn

- Hybrid Electric Propulsion
- Air-breathing Propulsion
- Advanced Communications
- Solar Electric Propulsion
- Power and Energy Storage
- Materials and Manufacturing

NASIC

- Cyber
- Data analytics
- C4ISR
- Modeling/Simulation/Analysis
- Hypersonics
- Directed Energy
- Space Systems

FRN Funding Focus

	BASIC Research and Development	Applied Research and Development	Advanced Technology Development	Demonstration and Validation	Engineering and Manufacturing	RDT&E Management Support	Operational Systems Test and Validation		
DOD RDT&E Level	6.1	6.2	6.3	6.4	6.5	6.6	6.7		
F O R F O C U S	<div>FRN COE Focus Mission Application Research for NASA, AFRL, NAMRU and NASIC</div>								
	<div></div>								
NASA	TRL1	TRL2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9
Basic Principles	Concepts Application Focus	Analysis and Experiments	Concept and Breadboard in Laboratory	Component and Breadboard Validation in Realistic Environments	System / Subsystem prototype demonstration in realistic Environment	System prototype demonstration in Operational Environment	Actual system completed and qualified through test and demonstration	Actual system proven through successful mission operations	

Impact to Date

- Collaboration and proposal quality is increasing dramatically.**
 - Projects required a lead university, one partner university, and at least one industry sponsor and federal sponsor.
- 12 Ohio universities & 2 community colleges received funding.**
 - Competitively awarded \$28M through three funding rounds.
 - Working with universities to improve their success going forward.
- 60 business partners engaged across Ohio.**
 - Half are small businesses - \$2.6M awarded to industry.
 - Industry Days and regional meetings held throughout the state.
- Multiple universities across state pursuing joint DOD efforts.**
 - Proposals pipeline in excess of \$350M+ across Ohio.
 - Universities have won **\$170M+ in new awards** from DARPA, ONR, AFRL, NASA, IARPA, and others.
- Created 8 new companies across Ohio.**
- Garnered \$20M of industry funded research statewide.**

Ongoing Statewide Activities

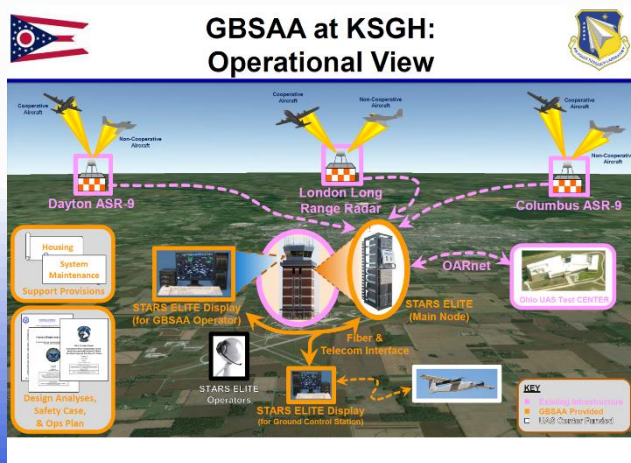
- Secured Ohio FY20-21 Budget \$4.95M/ Yr for OFRN**
 - Use to continue to drive collaboration and expand university, industry, and federal partnerships across Ohio.
 - Plan to quickly issue RFP for Soaring II and down select projects
- Secured a total of \$20M over FY18/19 NDAA for AFRL Autonomy R&D Center in Ohio**
 - Funded 5+ Ohio companies
 - Center is regularly winning many national competitions.
- Seeking \$10M federal funding in FY20 defense budget**
 - Entire Ohio Federal Delegation Supports Request
 - Expanding OFRN to support the Air Force's 2030 implementation plans.
 - Using \$10M in FY20 NDAA for AFRL to support an Air Force wide Academic Partnership and Engagement Experiment (APEX).
 - AFRL is awarding \$49M Contract to WSARC to Implement APEX



OFRN 5 Year Strategy

Vision: Make Ohio the nexus for unmanned air systems (UASs), personal air vehicles (PAVs), and logistics delivery air vehicles (LDAVs) testing, integration, and manufacturing.

- Short-term Strategy: Create OFRN air demo with NASA-AFRL assets for disaster response demonstration
- Long-term Strategy: Use staggered challenge programs to demo Ohio-based personal aircraft in 2022



Transition over
time to future
PAV





Integrated OFRN SOARING Effort

SOARING INITIATIVE

Public/private challenge problem:

Overcome technological barriers to enable more widespread adoption of UAVs, PAVs, & LDVs into the national airspace

Ohio Federal Research Network

OFRN provided funding to projects to carryout applied research (\$900K-\$2.1M)

Federal & State Infrastructure

New public/private, Ohio/USAF/Air Force/Navy/NASA/OANG beyond Line of Site test site served as test and demonstration location

Collaborative Partnerships

University, industry, and federal laboratory partnerships provided research, testing, and cost share to projects



Remotely Piloted Airplane

New PAV Testbed that can be used for air space integration testing new autonomy systems



Electric Engine

Foundational new brushless motor to enable next generations aerospace systems with a 30% reduction in weight



Unjammable Radar

New sense and avoid technologies integrated on UAV and integrated Air Traffic Control system



Universal Flight Data Translator

Telemetry and data integration into National Air Traffic Control systems for UAVs and PAVs



OFRN 5 Year Strategy

Vision: Make Ohio the nexus for UAS/PAV/LDAV testing, integration and manufacturing.



NASA Glenn Research Center (GRC) Priorities



Air Force Research Laboratory (AFRL) Priorities



National Air & Space Intelligence Center (NASIC) Priorities



State of Ohio



Naval Medical Research Unit (NAMRU) Priorities



United States Marine Corps (USMC) Priorities



Ohio National Guard Priorities

Executive Review Board

Wright State University Applied Research Corporation

Technical Review Council

Round 3 Goal:

Make Ohio a leader in development and manufacturing support in Personal Air Vehicles (PAVs), Unmanned Aircraft Systems (UASs) & heavy-lift Logistics Delivery Vehicles (LDVs)

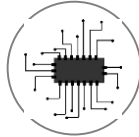




Areas of Interest for RFP

Computation & Analytics

*Automated Datafeed Analytics
Computational Efficiency
Onboard Heat Management*



Energy Efficiency & Onboard Safety

*Cryogenic Systems
On-board Energy
Safety Protocols*



Comms, Sensors, Security

*Integrated Comms/Sensors
Detect & Avoid
Security & Encryption*



Alternative Airfields

*Universal Translator
Alternative Airfields*



Field Swappable Aircraft

*Plug-and-Play Payloads
Field swap Aircraft*



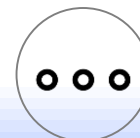
Prototyping & Qualification

*Rapid hardware/software
qualification
Virtual manufacturing*



Human Interaction & Policy

*Traffic Management
Operational Effectiveness*



Other . .

Everything else



Partner Requirements from SOARING

Partner	Requirements
AFRL	<ul style="list-style-type: none"> • Mobile and Ground Based Detect and Avoid • Safe access to mixed manned/unmanned airspace without op tempo disruption • Terminal air ops and AF UAS capabilities • Human-machine interface
Air National Guard	<ul style="list-style-type: none"> • UAS Sense and Avoid Systems • Persistent Full-Spectrum Communication Repeater • Mobile Ad Hoc Networks • UAS Deployable Launch and Recovery Kit • Command and Control Liaison Kit • Joint Incident Site Communication Capability and Block III Incident Site Data Service Extension
NAMRU-D	<ul style="list-style-type: none"> • Human-machine interface • Personnel performance characteristics • Advanced mobile sea platforms
NASA	<ul style="list-style-type: none"> • Demonstration of T34 capability • Persistent and scalable Communication, Navigation and Surveillance (CNS) • Portable Unmanned Traffic Management (UTM) and Persistent UTM
NASIC	<ul style="list-style-type: none"> • Secure and encrypted communications and UAS control • Persistent Sensing and Multi-Int Data Analytics • Space Applications
USMC	<ul style="list-style-type: none"> • Mobile local manufacturing and digital in-field production • Logistics delivery systems and automation



Key Dates (Tentative)

Funding Opportunity Announced	June 27, 2019
Half day training sessions held throughout the State	August and Early September 2019
RFP & Call for White Papers Released	September 18, 2019
White paper Training	September 20, 2019
White Papers Due	October 20, 2019
White Paper Feedback	Late October
Proposal Training	Early November 2019
Proposals Due	Early December 2019
Awards Announced	Mid January 2020
Projects Start	February 2020



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