Ohio Federal Research Network

Driving Innovation Through Strategic Partnerships

Round 6

Opportunity Announcement

Issued March 1, 2023

Ohio Federal Research Network (OFRN) Opportunity Announcement

1 OPPORTUNITY DESCRIPTION

1.1 General Overview Information

State Program:	Ohio Federal Research Network (OFRN)
Funding Opportunity Title:	Round 6
Announcement Type:	Opportunity Announcement
Funding Opportunity Number:	Parallax – 23-042

1.2 Key Dates

Event	Key Date
Opportunity Announcement Formal Release	March 1, 2023
Webinar: Informational Session and Q&A with AOI SMEs	March 2, 2023 (12:00pm – 1:00pm ET)* March 7. 2023 (4:00pm-5:00pm ET)*
Bidders Conference and Proposal Training	March 14, 2023* (9:00am-11:00am) *Mandatory*
Webinar: Informational Session and Q&A with AOI SMEs	April 17, 2023 (3:00pm -4:00pm)*
Proposal Questions Accepted Through	April 18, 2023, by 5:00 pm ET
Round 6 Solicitation Due date	April 28, 2023, by 5:00pm ET
Notification of Finalists	May 23, 2023
Interview Sessions for Finalists	June 12-16, 2023
Awards Announced	August 2023
Projects Start	September/October 2023

Information for sessions will be posted to https://ohiofrn.org
Bidders Conference and Proposal Training on March 14, 2023 is mandatory. At least one member of the proposal team needs to register/attend.

1.3 Description of the Funding Opportunity

The OFRN Round 6 Opportunity Announcement is focused on expanding Ohio's research and development capabilities across the state's academic institutions and business in support of Ohio-based Department of Defense federal partner needs, which ultimately promotes Ohio's economic growth.

OFRN Round 6 is seeking applied research only at a Technical Review Level (TRL) of 3 or higher. Areas of Interest (AOIs) include topics in **Hypersonics, Human Performance, High Power Energy Conversion, Digital Engineering Tools, Commercial Space in Low Earth Orbit and Quantum Sensing Technologies**. This announcement seeks to leverage Ohio's unique research capabilities and its federal partner's expertise to accelerate technology development and innovation by increasing collaboration across government, academic, and industry organizations and promoting student experiential learning. OFRN Round 6 will not fund projects for fundamental or basic research. All Primary Applicants must obtain any export control license needed and must only propose employees that meet such criteria.

1.4 Funding Availability

The Round 6 Opportunity Announcement is ***subject to funding availability*** based upon a pending review and final determination of the Program Objectives from the Ohio Department of Higher Education

(ODHE). OFRN will not reimburse interested parties for any costs incurred in the review and/or response to this document.

Total amount to be awarded:	**$10 - $20 million**
Anticipated individual awards:	$750k to $1.5M each
Cost share:	Cost share is optional, but favored
Project Period:	18 Months from Contract Signing
Award Type:	Cost Reimbursable Contract

1.5 Program Contacts

Title	Name	Email
Executive Program Director	Karen Posey	karen.posey@parallaxresearch.org
Contracting Questions	Jill Richards	jill.richards@parallaxresearch.org
Administrative Questions	Becky Mescher	OFRN-Question@parallaxresearch.org

1.6 OFRN PURPOSE

The Ohio Federal Research Network (OFRN) is a state-funded, Parallax-administered program designed to enhance the Ohio industrial base while also increasing research funding, talent, and capabilities development in Ohio to support future federal, state, and industry acquisition requirements. The State is investing in Ohio's Innovation Economy, and furthering Ohio's position as a national leader in both the defense and commercial sectors.

Bi-annually, OFRN releases an Opportunity Announcement to identify and fund research projects that are of interest to the federal partners and are likely to later be funded by a federal partner. During the OFRN contract cycle, awardees are also exposed and educated on federal acquisition processes and regulations. Further, awardees are prepared to compete for federal research opportunities.

OFRN Round 6 is funded by the Department of Higher Education (ODHE). This allows Ohio's academic faculty and their students the opportunity to advance their research alongside other cutting edge research projects.

The OFRN established a novel approach to technology-based economic development with a focus on aggregating, integrating, and leveraging federal, academic and private sector capabilities and resources in Ohio to develop proactive and innovative solutions to address emerging federal and state requirements as well as emerging market opportunities. OFRN research projects are intended to advance priority research thrust areas of the Ohio Federal Partners: Air Force Research Lab (AFRL), National Air and Space Intelligence Center (NASIC), Naval Medical Research Unit – Dayton (NAMRU-D), and National Aeronautics and Space Administration Glenn Research Center (NASA-GRC). OFRN also engages with the Ohio National Guard (ONG) regarding its organizational mission needs.

1.7 Program Description

1.7.1 Introduction

OFRN Round 6 focuses on applied research and technologies that will further enable and accelerate Ohio's national leadership role in both the defense and commercial sectors.

OFRN has used input from federal and state stakeholders as well as industry guidance to develop research focus areas that reflect defense mission priorities and shape commercial opportunities that will create job growth in Ohio.

Also included in this funding Round is the continuation of the Student Experience and Engagement (SEE) initiative. This initiative is intended to provide experiential learning for students enrolled within any STEM-related 2-year or 4-year program in any Ohio college or university.

OFRN Round 6 organizational structure and Review Teams are shown in Figure 1.

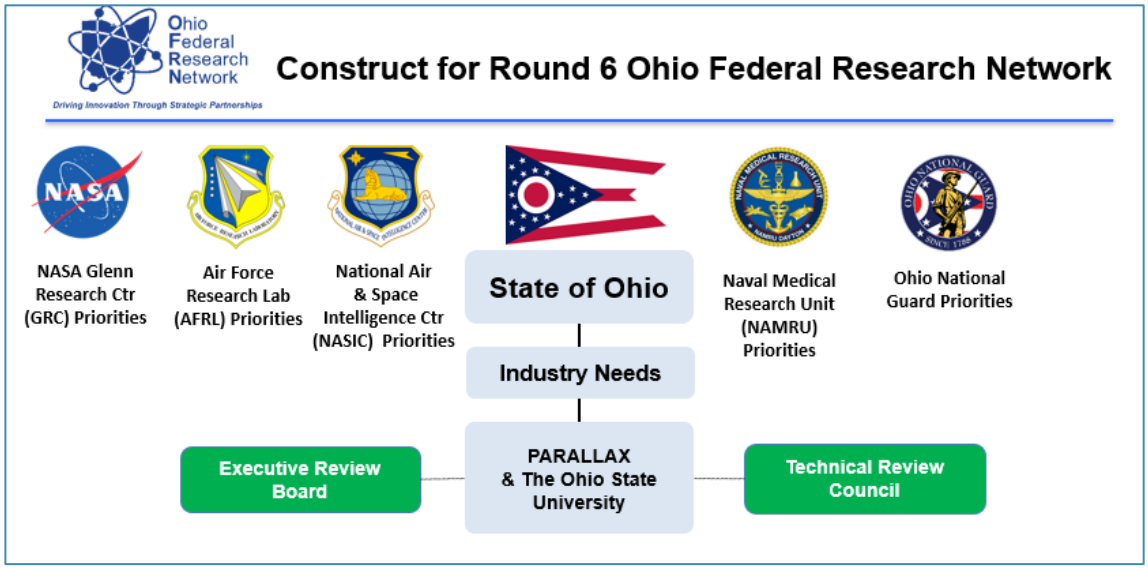

Figure 1: OFRN Round 6 Organizational Structure and Review Teams

OFRN and our Federal Partners spent considerable time developing and refining the Areas of Interest (AOIs). The focus was on fewer, higher priority research needs and topics that had cross-organizational interest/application. This enables maximum impact of OFRN investment by the Federal Partners. Commitments were made to ensure that each AOI would have organizational Subject Matter Expert(s) (SME) available to support project development and evaluation throughout the Round 6 Program. Scheduled sessions for technical questions and answers will be developed and communicated as part of the proposal process.

The following information is provided as an overview of each of the organizational missions of the OFRN partners.

NASA Glenn Research Center (NASA GRC)

NASA GRC's mission is to drive research, technology, and systems to advance aviation, enable exploration of the universe, and improve life on Earth. They do that through the following core competencies: Air-Breathing Propulsion; In-Space Propulsion and Cryogenic Fluids Management; Communications Technology and Development; Power, Energy Storage and Conversion; Materials for Extreme Environments; and Physical Sciences and Biomedical Technologies in Space.

Air Force Research Laboratory (AFRL)

The Air Force Research Laboratory (AFRL) is a scientific research organization operated by the United States Air Force Materiel Command dedicated to leading the discovery, development, and integration of aerospace warfighting technologies, planning and executing the Air Force science and technology program, and providing warfighting capabilities to United States air, space, and cyberspace forces.

National Air and Space Intelligence Center (NASIC)

The National Air and Space Intelligence Center (NASIC) is the United States Air Force unit for analyzing military intelligence on foreign air and space forces, weapons, and systems. NASIC assessments of aerospace performance characteristics, capabilities, and vulnerabilities are used to shape national security and defense policies and supports weapons treaty negotiations and verification.

Naval Medical Research Unit – Dayton (NAMRU-D)

The Naval Medical Research Unit Dayton is a major DoD medical research command, as well as the home of the Naval Aerospace Medical Research Laboratory and the Environmental Health Effects Laboratory. As a subordinate command to Naval Medical Research Center, NAMRU-D conducts aerospace medical and environmental health effects research to enhance warfighter health, safety, performance, and readiness. NAMRU-D's research addresses identified Fleet needs, and results in products and solutions ranging from basic knowledge, to fielded technologies.

The Ohio National Guard

The Ohio National Guard serves the citizens of Ohio and the nation by fulfilling the state and Federal military role of providing public safety when directed by the Governor or supporting the national military strategy when requested by the President. In either scenario, its focus is "Always Ready, Always There." Its unique mission encompasses protecting the homeland by responding to natural disasters or cyber-attacks here and by consistently answering the call of duty to defend the nation at home and abroad. Ohio National Guard - https://ong.ohio.gov/.

1.7.2 Federal Partner Requirements

OFRN Round 6 seeks to fund projects that align with needs identified by its Federal, State, and commercial stakeholders.

1. ***Projects must be Applied Research, 6.2 or 6.3. Technical Readiness Level should be 3 or higher.***
2. Projects must submit / collaborate with two universities and at least one industry.
3. Projects must be focused on the Areas of Interest addressed in this document.
4. Projects must have Student Experiential Learning.

Technology Control Plan (TCP) – University/college-based Primary Applicants must develop a TCP within forty-five (45) days of notice of award.

Export Control - Primary Applicants are responsible for export control compliance, including identifying the export control classification(s) of any projects and only utilizing employees that are U.S. persons or eligible to obtain the necessary export license to participate in the project.

1.7.3 Areas of Interest

1.7.3.1 Hypersonics

1.7.3.1.1 *Gradient Printed Structures for High Thermal Gradient Applications*

Future structures for high-speed aircraft will be subjected to severe temperatures and thermal gradients. It is anticipated that external skin temperatures may reach up to 2550F while supporting structures will be limited to 1300F. To minimize weight, the thermal protection system thickness needs to be thin (<2 inch) resulting in very high thermal gradients through the thickness. With the advent of advanced additive manufacturing techniques an area of interest to the government is the ability to print structures that can resist the external temperatures without oxidation and drop the temperature to levels acceptable to the support structure. Innovations are sought in the following areas: 1) Design/optimization for high thermal gradient structures; 2) Process parameters for making graded structures; 3) Powder

formulation to effectively grade the structure; 4) Means for doing non-destructive evaluation to ensure final structure meets the specification. 5) Ability to embed high temperature health monitoring sensors.

1.7.3.1.2 *Novel Joining/Sealing Techniques for High-Speed Vehicle/Propulsion Systems*

Future structures for high-speed aircraft will be subjected to severe thermal conditions, with external temperatures reaching up to 2550F. Future vehicles are anticipated to have joints between adjacent thermal protection panels and between thermal protection panels and leading edges. These joints must remain closed and leak-tight over the whole flight regime, without raising steps or gaps. Innovations are sought in the following areas: 1) High temperature joining techniques to join “hot” structures (e.g. leading edges) to “warm” adjacent structures or “hot” structures to “cold” sub-structures; 2) High temperature flexible seals with near zero leakage that can accommodate structural movement; 3) Novel 3-D printing approaches that would eliminate joints or mitigate joining issues; 4) Techniques for joining of thin metallic structures for cost-effective solutions for multiple mission cycles; 5) Ability to embed high temperature health monitoring sensors.

1.7.3.2 Human Performance

1.7.3.2.1 *Physiological and environmental monitoring for ocular health and human performance*

Non-invasively image optic nerve and retina of each eye to identify signs of Spaceflight Associated Neuro-Ocular syndrome (specifically: optic nerve swelling, choroidal folds, and cotton wool spots) and track changes over time.

Eye tracking and physiologic monitoring capable of evaluating signs of cognitive fatigue, workload, and impending loss of consciousness (LOC), including, but not limited to peak saccade velocity, saccade amplitude, pupil size, blink duration, fixation duration, and scan patterns mapped to objects of interest in the environment. A secondary but integral parallel effort would support the development of ‘real-time analytics and algorithms’ that produce cautions or warnings when significant changes in physiology and associated human performance are detected. These algorithms could utilize single or integrated eye tracking metrics in combination with other commonly available physiological signals (e.g., heart rate, respiration).

1.7.3.2.2 *XR telemedicine / patent care in austere / isolated environments*

The DoD and NASA are interested in exploiting technology advances for Extended Reality to enhance pre-hospital emergency care capabilities of individuals with minimal medical education and training. Enabling technologies may include Augment and Virtual Reality devices combined with in-house developed applications to provide guided instruction on emergency medical care. The desired end-state would be a system that incorporates intelligent cueing of the situation, including patient ABCs (i.e., airway, breathing and circulation information), injury/illness identification, and refinement/tailoring of interventional strategy, and generates a customized set of guided instructions for the user to follow. Technology approaches should address technologies including isolated network operation (i.e., no cellular, satellite or other wide area network connection), field-portability and ruggedness, and human factors design issues of operating in austere and isolated environments.

1.7.3.3 High Power Energy Conversion

1.7.3.3.1 *Affordable DC Emulation and Digital Engineering:*

Electric system failures have accounted for a majority of Remotely Piloted Aircraft (RPA) Class A Mishaps. Meanwhile, vehicle integrators are adding electrically enabled features such as: autonomy, advanced electrically powered payloads, and hybrid, electric propulsion systems all while reducing costs. In order to assess these systems in an efficient, cost-effective manner for performance (MIL-STD-704) and safety, the federal government

leverages Digital Engineering (DE) approaches to investigate and address design shortfalls and reduce risks early in the development cycle. Experimental hardware-in-the-loop is a DE approach that leverages digital models and physical hardware. For electrical systems a Direct Current Emulator (DCE) is an advanced bi-directional DC power supply/sink that can be used to fill-in for unavailable components while presenting their relevant boundary conditions. The federal government is interested in developing a modular, affordable DCE to encourage budget-constrained industry and academia to use and develop novel DE techniques, conduct smart integrated testing, and bring non-traditional vendors to market.

At the end of 18 months an ideal state or result would be a low TRL demonstration of an affordable DCE coupled in real-time with relevant, digitally engineered, electrical source or sink representations with a path towards commercialization.

1.7.3.3.2 *Beta-Gallium Oxide (β-Ga2O3) Substrate Development*

A bottleneck in the transition of *Beta-Gallium Oxide (*β-Ga_2O_3) for power electronic applications from the lab to industry is the lack of substrate availability. There are very few sources of these substrates domestically and an expansion in domestic capabilities is needed to stay competitive in the field. Current domestic supplies of substrates need additional work to demonstrate their readiness for device applications. What is needed is the development and demonstration of testing protocols for qualifying existing substrates through extensive characterization such as X-ray diffraction (XRD) and atomic force microscopy (AFM) and growth of device ready epitaxial films. Additional investigation in the area of polishing and subsurface damage is also required in the early stages of development. At the end of 18 months an ideal state would be the demonstration substrate of testing protocols for substrate qualification which include high quality epitaxial films grown on domestic substrates to show readiness for state-of-the-art power electronics.

1.7.3.4 Digital Engineering Tools

1.7.3.4.1 *Techniques to convert between model fidelity levels or the development of surrogate models using machine learning and artificial intelligence tools for applications in complex engineering systems and digital twins.*

Digital technology has been revolutionizing the world of engineering design and complex product development. Modeling of engineering systems based on multi-physics models has played a major role in understanding system behavior, degradation of systems, and prediction of future performance. Such models are also playing a key role in the development of digital twins. As engineering systems become more complex, multi-physics models become computationally expensive and requires high performance computing resources. An alternate approach is the development of surrogate models based on artificial intelligence (AI) tools such as deep learning. Such models can run simulations orders of magnitude faster than the conventional multi-physics models. This topic is focusing on application of AI or development of complex engineering systems and digital twins of such systems. Areas of interest include (1) Develop of trustworthy and explainable AI models to facilitate development of surrogate models for complex engineering systems, (2) Development of engineering workflow deploying the surrogate AI-based models, and (2) demonstration of the application of AI-based surrogate models for design and development of systems in the areas solicited by OFRN for this cycle (e.g., high power energy, hypersonic gradient printed structures, and dc emulators).

1.7.3.4.2 *Methods (low cost) model validation and assessment of digital maturity metrics*

Digital transformation has become a high priority for almost all organizations. Transformation of engineering and its integration with business practices is a key priority for aerospace businesses and aerospace technology development organizations. Despite significance progress made in digital transformation, there is no common accepted practice for assessing the maturity of digital transformation in various organizations. Most of the digital maturity assessments have been qualitative. This topic will focus on the development of quantitative

tools to assess the digital maturity of organizations. Of interest is the development of easy-to-use software that can measure digital maturity of different kinds of organizations, such as manufacturing, design engineering, and technology development. The application of the quantitative tools and associated software should be demonstrated for two or three different types of organizations.

1.7.3.5 Commercial Space in Low Earth Orbit

1.7.3.5.1 Materials Joining Automation in Lower Earth Orbit

In-Space, Servicing, Assembly, and Manufacturing (ISAM) is a fast-growing sector supporting commercialization, exploration, and defense purposes. The White House has published guidance for both an ISAM national strategy and an ISAM implementation plan. The White House has also included ISAM and robotics as two key factors supporting the Space S&T strategy. As the concept of on-orbit (in-space) assembly and manufacturing begins to take shape, there exists a need for robust and validated methods for joining a variety of materials. This is a necessary for enabling the industrialization of the space environment. We need to construct solutions for joining metals, polymers, and composites in hazardous, on-orbit (in-space), and non-terrestrial extreme environments such as microgravity, vacuum, radiation, atomic oxygen, and thermal variations. These solutions may require humans out-of-the-loop and autonomous solutions are highly desired.

1.7.3.5.2 On-Orbit Biomanufacturing and Repurposing of Space-based Materials

DoD is seeking innovative technological solutions to address industrialization of space and advance materials science research and development for manufacturing using biological organisms in unique space environments. Future commercial space platforms could offer tremendous potential for supporting the on-orbit manufacturing enterprise through the use of biological organisms (bacteria, fungi, plants, etc.) that enable manufacturing processes, such as reclamation, synthesis, and others, in outer space and controlled space environments.

Proposal teams are encouraged to address techno-economic advantages of on-orbit bio-based processes vs. chemistry-based (non-biological) solutions and terrestrial manufacturing alternatives in terms of process efficiency, technology lifecycle cost, and energy budget.

Technical approaches may include but are not limited to the following topics:

- Technologies for reclamation and repurposing of materials and waste in space and utilizing space materials as feedstock for biological processes, with emphasis on low Earth orbit.
- Industrial biotechnology solutions for advancing the state-of-the-art of biological processes that facilitate in-space energy harvesting and storage.
- Technologies enabling fermentation in reduced gravity environment.
- Natural materials that enhance radiation shielding.
- Technology solutions focused primarily on biomedical or human factor applications are outside the scope of this topic.

1.7.3.6 Quantum Sensing Technologies

Quantum Information Science (QIS) is a growing area of interest nationally and includes quantum sensing, computing, and communication. The focus of this topic is to stimulate the development and integration of quantum sensing technologies into quantum systems to realize broader quantum systems of enhanced capability.

Sensors developed with a quantum communication or processing capability can lead to enhanced multimode quantum sensor networks that would have high levels of sensitivity (i.e. long baseline sensor array). In this call, it is desired that quantum sensors technology be

developed and that there be a physical development of a sensor. The sensing technology should be developed with an understanding that it must be integrated into a quantum system.

This topic is focusing on quantum sensor development that incorporates an aspect of either quantum processing or computation. Quantum sensing technologies of interest include sensors that provide high precision measurement of physical quantities (e.g., magnetic and electrical fields, temperature, rotation) that is not possible today with conventional sensors.

The quantum sensors should be physically developed but the study of the integration of the sensors into a quantum system can either be done through the development of a physical capability or the modeling of the sensor in the context of a broader quantum sensing system. For instance, the offeror could develop a small quantum processor, of perhaps a gate or two, or they could model how the sensor connected to a quantum processor could obtain an improved measurement.

Likewise, a communication capability that would transmit a quantum state from the sensor to a remote location could be developed or a model of how the quantum state could be transmitted and utilized at a remote location could also be developed. Another possibility would be sensors connected through quantum communication to quantum computers as part of future Quantum Internet of Things

1.8 End of Project Final Report & Federal Partner Presentation

Each program will be required to:

- Present their applied research/program to the Federal Partner(s) that supported the project for closeout.
- Produce a final report that will be posted on the OFRN website.
- Primary Applicants are encouraged, but not required for teams to think about all data, software, and knowledge products (reports, etc.) to be available in digital format with meta data descriptors.

This is an opportunity to verify performance and completion of a project, and to showcase the technology to stakeholders and potential customers for follow-on funding.

2 AWARD INFORMATION

2.1 Estimated Funding and Availability of Funds

Contingent upon and subject to receiving appropriated funds from the State of Ohio, OFRN Round 6 is expected to fund between $10-20 Million in research projects. OFRN intends to fund projects between $750,000 - $1,500,000 each, exclusive of any cost share proposed.

2.2 Number of Awards

The exact number and size of awards will depend on the number of meritorious proposals and the availability of funds.

2.3 Anticipated Award Date and Notice to Proceed

Per the cover page of this announcement, OFRN expects to announce awards in August 2023. Note: OFRN is not obligated to make any awards.

After award notification and contract execution, the project will begin. Parallax Contracts will then provide a Notice to Proceed (NTP) authorization with a limitation of funds. The Applicant may not begin work until after the NTP is formally provided.

Awardees should not expect a No Cost Extension (NCE) to the contract period. Any delays caused by the project members (industry or academia) will be borne by the party that caused the delay. Delays caused by external factors (i.e., supply chain) will be addressed on a case-by-case basis.

2.4 Contractual Arrangement

All Subcontract(s) issued under this announcement will be cost reimbursable contract(s). Appendix 5A and 5B of this announcement provide terms and conditions for the proposed contract(s). Note that two versions of terms and conditions are provided: Appendix 5A for private universities/colleges and industry (either for-profit or not-for-profit organizations); and Appendix 5B for Ohio public colleges and universities. These terms and conditions will become contractual upon OFRN's acceptance of the Applicant's proposal. Please see Section 3.4.1.1 of this Opportunity Announcement regarding taking exception to these terms and conditions.

2.5 Eligibility Information

A Primary Applicant is the entity that submits a proposal for OFRN Round 6. Primary Applicants are legally and financially responsible for the administration of any resulting award of OFRN funds. Proposed projects may be led by either an industry in Ohio (either for-profit or not-for-profit) or an Ohio college or university. Regardless of the leading organization, project teams must include:

- At least two Ohio colleges or universities;
- At least one commercial/ industry organization with a physical presence in Ohio (either for-profit or not-for-profit);
- At least one partner from an Ohio-based Federal lab (Please do not solicit letters of support from Federal Centers); and
- Proposals must include a Student Experiential Engagement (SEE) program in accordance with Appendix 1.
- Note: Project teams that include the Air Force Institute of Technology (AFIT) are eligible to submit a response to this Opportunity Announcement. However, Primary Applicants must demonstrate how funding for AFIT research will directly support job creation across Ohio. For example, a Primary Applicant may propose to non-Air Force researchers in the AFIT graduate education system in order to foster "outside the fence" opportunities for collaboration.

Primary Applicants that become contract awardees must maintain eligibility while the contract is open. A contract awardee that loses eligibility forfeits its award and may be required to repay OFRN the full amount of the monies it has received, plus interest.

Note: When requested, OFRN staff will help facilitate the formation of teams through an online matchmaking tool to assist individuals or organizations interested in participation with teams. The online matchmaking form is available at https://ohiofrn.org on the current solicitation/Round 6 information page https://www.ohiofrn.org/solicitations/ohio-federal-research-network-round-6-solicitation.

2.5.1 Cost Share Requirements and Guidelines

OFRN Round 6 projects are not required to have a cost share contributed by the project team, but it is encouraged.

Cost share may directly demonstrate the level of commercial and academic support for a project; meaningful cost share proposals will be viewed favorably in the evaluation of proposals. Factors in assessing cost share can include:

- Magnitude
- Any conditions associated with the cost share
- Type of cost share

2.5.2 Limitation on Submissions

There are no limits on the number of proposal submissions that a Primary Applicant or a project team member may submit.

2.6 Public Information

Primary Applicants are reminded that all information submitted in response to this Opportunity Announcement is considered public information unless a statutory exception exists that exempts it from public release (See Ohio Public Records Act, O.R.C.§149.43; see Uniform Trade Secrets Act at O.R.C. §§133.61-1333.69).

Exempted information (i.e., trade secrets, etc.) shall bear the marking "Proprietary Information". To the extent possible, proposals shall contain this marking in the header and footer of each page where proprietary information is included.

Applicants are strongly discouraged from including any trade secrets or otherwise exempted information in their proposal(s). If it is included, the proposal must contain an attachment listing all instances of exempted information. Further, all trade secret or otherwise exempted information shall bear the marking "Trade Secret," or “Ohio Public Records Act Exempted Information” with a description of the exemption.

3 OPPORTUNITY ANNOUNCEMENT

3.1 General Instructions

3.1.1 Submission Guidelines:

For Round 6, OFRN is instituting a simplified submission process. Initial submission requires:

- Technical Proposal (no more than 8 pages) discussing your **Applied Research Idea**. ***No basic research proposals will be accepted.***
    - **Cover page with all elements in Section 3.2.1 below addressed.**
- Student Experiential Engagement (Appendix 1, no more than 2 pages)
- Full Length Resumes (max 5 pages each): principal investigator, subcontractors and consultants, if any.
- Subcontractor Letters of Intent (LOI)
- Technical Proposal Supplement (2 pages)
- Cost Proposal (Business & Cost Proposal Template, Appendix 4& 6)
- Vendor Profile (Appendix 2)
- Quad Chart (example/template, Appendix 7)
- Technical Review Level (TRL) - Evaluate and document the TechGauge assessment found at : *https://techgauge.mile-two.com/* Please attach the report within your submission
- Reasonableness of the proposed project schedule, budget, and SOW
- In the sole determination of OFRN, Proposals that exceed this page limitations may be disqualified from further review.

The top projects selected will proceed to the next phase, and will be scheduled to present their technical quad chart and financials to the Technical Review Council. Project teams should be

prepared for questions. The Technical Review Council will down select the finalist(s) from here, depending upon funding availability.

NOTE: OFRN projects must be TRL 3 and higher, and applied research rather than basic research. Primary Applicants are required to provide information demonstrating that the scientific and technical merit and feasibility have been established. Proposals will not be evaluated if the proposal fails to demonstrate that technical merit and feasibility has been established or the Applicant has failed to demonstrate that work submitted in the feasibility documentation was substantially performed by the Applicant and/or the principal investigator (PI), or that the project utilizes commercial-off-the-shelf (COTS) components in an innovative configuration or application.

Applicants shall submit information to the OFRN general inbox:

OFRN-Submission@parallaxresearch.org. with a carbon copy (CC) to Becky Mescher at becky.mescher@parallaxresearch.org.

Deadlines:

- Technical Proposal (no more than 8 pages), Technical Proposal Supplement, Quad Chart, Cost and Business Information Sheet, Vendor Profile, and TRL level, must be submitted no later than **5:00pm Eastern Time on April 28, 2023.**

Proposals received after the due date and time will be rejected. It is the responsibility of the Primary Applicant to ensure submission of a complete proposal based on all requirements of this Opportunity Announcement. If possible, Primary Applicants are encouraged to submit their proposals early.

3.1.2 General Formatting Requirements:

The Proposal must be written in English and adhere to the following format. Noncompliant proposals shall be rejected without review:

- Proposals are to be submitted on 8.5 x 11-inch page size with type no smaller than 10-point, single spaced.
- Margins must not be less than one (1) inch on all sides,
- Fonts used must be one of the following: Arial, Helvetica, or Times New Roman, and used uniformly throughout.
- All pages must be numbered consecutively using the format “Page [#] of [total number of pages]” (e.g., Page 2 of 6).
- The proposal title and Primary Applicant organization name must appear in the footer of each page.
- Technical Proposal must include the area(s) of interest (AOI) in the header of each page
- Proposals should not include color figures that cannot be understood when photocopied in black and white.
- The first page of the proposal must be the Application Information Cover Page using the template. This Application Information Page will NOT COUNT toward the page limit for the Technical Proposal
- Do not include a cover or cover letter other than the Application Information Page.
- Proposals must be submitted in PDF format.

3.1.3 Amendments:

Should there be any changes to this Opportunity Announcement, a formal Amendment will be issued. All Amendments to the Opportunity Announcement will be published on the OFRN website.

3.1.4 Parallax Points of Contact:

Contractual	Non-Contractual
Jill Richards, Parallax Contracts Administrator	Becky Mescher, OFRN Program Coordinator
937-901-4427	937-307-6686
jill.richards@parallaxresearch.org	Becky.mescher@parallaxresearch.org

3.1.5 Questions:

All questions are to be submitted to the OFRN general inbox:

OFRN-Question@parallaxresearch.org by **no later than 5:00pm Eastern Time, ten (10) days prior to the formal proposal submission date**. FAQs will be posted to the OFRN website, and Primary Applicants should review carefully.

3.2 Technical Proposal (no more than 8 pages)

Unless otherwise noted, the proposal must address all the elements listed in this section in the order requested.

3.2.1 Cover Page

The Applicant shall provide a cover page introducing OFRN to the proposal submission.

The Applicant shall complete the following information, which shall not exceed one page in length. This cover page does not contribute towards the Technical Proposal's page limits:

Applicant Organization Name:	
UEI Number:	
Taxpayer Identification Number:	
Lead PI Name:	Lead PI Name, Email Address, Phone
Contractual Point of Contact:	Name, Email Address, Phone
Project Name:	
1. Summary description of project being proposed	
2. Description of Federal research requirement (s)	
3. Government POC	Name, Title, Department, Agency -- Phone, Email Address
4. University Team Members	Institution, Lead Contact Name, Email Address, UEI -- Institution, Lead Contact Name, Email Address, EUI Number
5. Industry Team Members	Company, Lead Contact Name, Email Address, City, State; Company, Lead Contact Name, Email Address, City, State
6. Cost share listed by source (Industry, University, Other)	Source, $N,NNN,NNN
7. Potential Follow-On Funding	List by organization and timing -- Funder, $N,NNN,NNN, Year: NNNN -- Funder, $N,NNN,NNN, Year: NNNN
8. Funding requested by calendar year	2023: $NNN,NNN; 2024: $NNN,NNN; Total Requested: $NNN,NNN
9. New jobs created by the end of State Fiscal Year 2025	NNN
10. Background IP contributed	(State what it is and who owns it)
11. Anticipated Project IP Created	(Describe what may be generated, and how it will be protected/shared)

12. Statement indicating that your firm is not debarred, suspended or proposed for debarment as the result of performance under any Federal contract, grant, or cooperative agreement
13. Prior, current, or Pending Support of Similar Proposals or Awards: (see Technical Proposal instructions)
14. Appendix 5A or 5B: include a statement of which contract applies to your firm. Primary Applicant will be bound by the terms unless an exception(s) is clearly identified in the Business and/or Cost Proposal.
15. Statement attesting that Primary Applicant has read all Appendices.

3.2.2 Executive Summary

The Executive summary is limited to 1 page that precisely describes the innovation, proposed project objectives, and commercial goals. The Executive Summary may include figures. Do not use jargon and technical language, and instead write so that a non-expert can understand the specific innovation and impact of proposed project around that innovation.

3.2.3 Table of Contents

A table of contents should be located immediately after the Executive Summary.

3.2.4 Glossary

Include a glossary of acronyms and abbreviations used in the proposal.

3.2.5 Milestone Identification

Include a program schedule with all key milestones identified. If options are proposed, the schedule should provide notional option start date and period of performance.

3.2.6 Identification and Significance of the Problem or Opportunity

Briefly reference the specific technical problem/opportunity that will be pursued, and the Federal Partner contact and identified needs under this effort.

3.2.7 Technical Objectives

Detail the specific objectives of the proposed work and describe the technical approach and methods to be used in meeting these objectives. The proposal should also include an assessment of the potential commercial application (government or non-government) for each objective.

3.2.8 Federal Partner Applications

Briefly describe the existing/potential Federal Partner requirement and the Federal Government potential of the project results. Identify the government agency/organization most likely to benefit from the project. State if any government agency has expressed interest in, or commitment to a Federally funded follow-on effort. This section should involve not more than one to two (1-2) paragraphs. This section should not be duplicative of information contained in the Identification and Significance of the Problem or Opportunity section. Include agency point of contact names and telephone numbers.

3.2.9 Relationship with Future Research or Research and Development (R/R&D) Efforts:

- Please list any previous SBIR/STTR awards, including phase numbers, for this specific technology, regardless of federal agency.
- State the anticipated results of the proposed approach, specifically addressing plans for further development, if any.
- Discuss the significance of this effort in providing a basis for further development effort, if planned.

3.2.10 Key Personnel:

In the Technical Proposal, identify all key personnel involved in the project. Include information directly related to education, experience, and citizenship. A technical resume (maximum 5 pages) for the Principal Investigator (PI), including publications, if any, must also be included. Concise technical resumes for subcontractors and consultants, if any, are also useful.

All Primary Applicants are responsible for export control compliance, including identifying the export control classification(s) of any projects and only utilizing employees that are U.S. persons or eligible to obtain the necessary export license to participate in the project. Successful Primary Applicants will be required to demonstrate compliance.

3.2.11 Facilities/Equipment

Describe instrumentation and physical facilities necessary and available to carry out the proposed effort. Justify equipment to be purchased (detail in cost proposal). State whether proposed performance locations meet environmental laws and regulations of Federal, state, and local Governments for, but not limited to, airborne emissions, waterborne effluents, external radiation levels, outdoor noise, solid and bulk waste disposal practices, and handling and storage of toxic and hazardous materials.

3.2.12 Subcontractors

Private companies, consultants, or universities, all considered herein as Subcontractors, may be involved in the project. All should be described in detail and also included in the cost proposal. **In accordance with OFRN Round 6 eligibility requirements, proposals must include a minimum of two Ohio public or private universities or colleges and one industry partner (with a location in Ohio) each with significant contribution to the proposed effort.** Signed copies of all subcontractor letters of intent must be attached to the proposal. These letters should briefly state the contribution or expertise being provided. All Primary Applicants are responsible for export control compliance, including identifying the export control classification(s) of any projects and only utilizing employees that are U.S. persons or eligible to obtain the necessary export license to participate in the project.

3.2.13 Prior, Current, or Pending Support of Similar Proposals or Awards

WARNING: While it is permissible, with proper notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work for consideration under numerous federal (or state) program announcements, it is unlawful to enter into contracts or grants requiring essentially equivalent effort. Primary Applicants must disclose any duplicate funding before award. If a proposal submitted in response to this Announcement is substantially the same as another proposal previously, currently, or in process of being funded by another Federal or State agency the company must so indicate on the Cover Page and provide the following:

a) The name and address of the federal or state agency(s) to which proposals were or will be submitted, or from which an awarded is expected or has been received;

b) The date of proposal submission or date of award;

c) The title of the proposal;

d) Name and title of the principal investigator for each proposal submitted or award received; and

e) Title, number, and date of Announcement(s) under which the proposal was or will be submitted, or under which an award is expected or has been received.

f) If award was received, provide the contract number.

g) Specify the applicable topics for each SBIR proposal submitted or award received.

NOTE: If this section does not apply, state in the proposal, “No prior, current, or pending support for proposed work.”

3.2.14 Appendices

Items in the appendices do not count towards the page limit. Items that can be contained in the appendices are as follows:

3.2.14.1 Student Experiential Engagement (SEE)

Student Experiential Engagement (SEE) program information should be a maximum of 2 pages and placed as the first item in the Appendices. Consult Appendix 1 for additional information about SEE.

3.2.14.2 Resumes

Full length resumes referenced in sections 3.2.10 and 3.2.12 should be abbreviated (maximum 5 pages) and submitted as an appendix.

3.2.14.3 Letters of Intent

3.3 Technical Supplement (2 pages)

The bulk of the Technical Proposal requirements are meant to mimic the requirements of an SBIR Direct to Phase II. A 2-page Technical Proposal Supplement is also necessary to address OFRN-specific concerns including:

- Projected economic impacts,
- Technology demonstration plan, and
- A budget narrative and table.

3.3.1 Economic Impact Metrics

This section of Technical Proposal Supplement must address the projected economic impact metrics that are anticipated because of the project. The Primary Applicant should specifically address the following primary metrics:

- New job creation
- Federal Follow-on funding
- Creation of Spin-out companies

Job creation should be realistic and supportable. Federal follow-on funding and any other identified opportunities must include pertinent details--agency, BAA, etc. (see New Opportunities table below). The Primary Applicant should document how these projections were developed and key assumptions used in the analysis. For example, if the projections are based on capturing a particular share of the market, the Proposal should indicate the magnitude of the addressable market and the basis for the estimated market share. The Primary Applicant should report only direct impacts, not secondary or tertiary impacts derived from economic models.

Proposals may also include a description of any relevant secondary metrics, including:

- Possible Industry-sponsored research
- Papers published in journals or presented by any of the team members
- Talent recruitment to include any students/interns hired through the Student Experiential Learning process
- Enhanced national and/or international recognition which leads to further interest and potential sources of funding and collaboration.

The following tables must be completed and included in this section of Technical Proposal Supplement (add rows as needed to the New Opportunities table):

	At Project End	By 2025
New Jobs to be Created		
Total Federal Follow-on Funding		
Executed License Agreements		
IP Generated		
Papers Published		
Presentations Delivered		
Number of Students Engaged		

New Opportunities/ Investments	Amount	Type (BAA, Sponsor, etc.)	Timing of Opportunity

3.3.2 High Level Budget and Cost Share

Using the tables that follow, provide a high-level budget for the project. Provide a brief narrative that explains how the funds will be deployed over the life of the project. Add additional columns or copies of the cost share table as needed.

	OFRN Awarded Funds	Cost Share Funds
Personnel/Fringe		
Supplies		
Purchased Services		
Travel		
Other Direct Costs		
Subcontracts		
Indirect		
Total		

	Cost Share Provider #1	Cost Share Provider #2	Cost Share Provider #3	Cost Share Provider #4
Personnel/Fringe				
Supplies				
Purchased Services				
Travel				
Other Direct Costs				
Indirect				
Total				

3.4 Business and Cost Proposal

3.4.1 Business Proposal (refer to Appendix 6)

3.4.1.1 Exceptions

Exceptions to the terms and conditions of the Opportunity Announcement, including Appendix 5A and 5B, Contract Terms and Conditions, are **NOT** sought and OFRN/Parallax is under no obligation to enter into negotiations related to such exceptions. However, if the Applicant choses to take exceptions, such exceptions shall be clearly listed as an Appendix to the Business and Cost Proposal.

3.4.2 Cost Proposal (refer to Appendix 6)

4 EVALUATION CRITERIA (OFRN)

4.1 Award evaluation criteria

- Only the most meritorious proposals are sought for funding.
- Proposals will be evaluated by the OFRN's Technical Review Council based on responsiveness to all the requirements of this Opportunity Announcement. Implicit in those requirements and evaluation criteria is the quality of the statement of work and budget, as well as supporting documentation.
- **All proposals MUST be based on Applied (6.2 & 6.3) Research. Basic (6.1) research WILL NOT be funded**. The Technology Review Council will make the determination if the proposal meets the applied research criteria.
- Parallax is under no obligation to award any contracts.

4.1.1 Go/No Go Criterion: Federal Alignment

- The proposal demonstrates how applications/user driven requirements are derived from and aligned with the emerging mission and research focus areas of the Federal Partners outlined in this document.
- The project has an identifiable Federal Government Sponsor. There is a demonstrated relationship with the Federal Government Sponsor and Project Lead Organization, either as the result of documented development meetings or previous relevant working engagements.

5 APPENDICES

Download appendices documents from OFRN Round 6 website

https://www.ohiofrn.org/solicitations/ohio-federal-research-network-round-6-solicitation

5.1 APPENDIX 1: Student Experiential Engagement (SEE) Program

Background

Today, rapid technology advancements in all industries, across both public and private business sectors, is impacting workforce development strategies and mandating that education and experiential learning programs begin sooner and involve more collaboration among government, industry, and academia. The *SEE* program will enable Project Teams whose projects are selected for final award to recruit and hire student interns to work and learn throughout the duration of their Round 6 project. Students will be afforded an opportunity to actively participate in moving technology from research, through business application and defense mission requirements, to commercialization and market entry.

Program Guidelines

The *SEE* program is intended to be a framework for Project Teams to build from and adapt to specific project needs. Student interns should be afforded the opportunity to engage with a wide span of participants within a Project Team but will be hired by a single organization (host organization), who will be the employer for the student intern. The host organization may be any one of the project team's university, business, or Federal partner participants. The student can be employed by any of the team members at any time throughout the duration of the project. Specific organization rules and procedures will govern the employment term up to a maximum of 18 months, which is the period of performance for the Round 6 project awards. The host organization is encouraged to work with an Ohio university through the university's internship/co-op office. Particular attention should be given to understanding the University guidelines for student payment and course credit.

The internship will be a paid position; however, salary and terms of employment will be determined by the host organization/ employer. Team participants may also contribute internship funding subject to organizational, local, state, and Federal laws and are encouraged to seek funding and program assistance from other State and Federal resources. Again, how the Project Team will structure, manage, and invest in their internship depends on the business and research needs of each team. However, these internships must include the following elements:

- Student's core curriculum should be STEM focused with student recruitment limited to Ohio universities, colleges, and community colleges.
- An overview of the project that outlines the purpose, expectations, innovation opportunities, team members, timeline, and budget must be included in the proposal as an attachment. (**Maximum 2 pages – does not count towards the Technical Proposal limits**)

Student Eligibility

In most cases, to be eligible for the Program, a student must be a United States citizen attending an institution of higher education in the State of Ohio and enrolled in degrees from Associate to the Doctoral level in all disciplines, with a focus on STEM learning. (minors or coursework in policy, legal or business should be encouraged and is allowed). There may be certain opportunities for non-U.S. citizens to participate on the project teams, however any exceptions will need to be highlighted in the team's Technical Proposal for the federal partner to review and approve as necessary. Primary Applicants are responsible for export control compliance, including identifying the export control classification(s) of any projects and only utilizing employees that are U.S. persons or eligible to obtain the necessary export license to participate in the project.

Program Resources

Ohio universities and colleges all have their own student academic and career counseling centers that should be leveraged for support. The following is an additional resource that can aid in certain areas.
https://highered.ohio.gov/students/current-college-students/internships/internships-co-ops

5.2 APPENDIX 2: Vendor Profile

5.3 APPENDIX 3 Cost Share Guidelines

5.4 APPENDIX 4: Excel Cost Worksheet

5.5 APPENDIX 5A: Subcontract Terms and Conditions – Private Universities or Colleges and Industry (Either For-Profit or Not-for-Profit Organizations)

5.6 APPENDIX 5B: Subcontract Terms and Conditions – Public Universities or Public Colleges

5.7 APPENDIX 6: Business & Cost Proposal Template

5.8 APPENDIX 7: Quad Chart Template

5.9 APPENDIX 8: Tables for Use in Proposal Submission Template