

ARMY RESEARCH OFFICE

SPECIAL NOTICE FOR

Quantum Ecosystem Advancement, Growth & Leadership
(QuantumEAGLe)



W911NF23S0001-Special Notice- QuantumEAGLe

Issued by:

U.S. Army Contracting Command-Aberdeen Proving Ground
Research Triangle Park Division
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Research Triangle Park, NC 27709-2211

Funding Opportunity Title: Quantum Ecosystem Advancement Growth & Leadership (QuantumEAGLe)
Funding Instrument Type: Other Transactions Prototype (OT-P) and Research (OT-R)
Funding Opportunity Number in Grants.gov, SAM.gov: W911NF23S0001-SPECIALNOTICE-QuantumEAGLe
White Paper Due Date: 30 September 2026

Description:

The purpose of this Special Notice under the DEVCOM Army Research Laboratory (ARL) Broad Agency Announcement (BAA) (W911NF23S0001), under SAM.gov Opportunity W911NF23S0001-SPECIALNOTICE- QuantumEAGLe, is to strengthen the US quantum computing ecosystem, and advance fault-tolerant quantum computing. This will be accomplished by engaging with non-traditional companies and other entities developing commercial quantum computers to overcome supply chain, innovate on the approach to gate-based algorithms, and to investigate foundational research obstacles that require deeper scientific understanding to scale quantum computing. In turn, the developed technology will boost the US quantum computing ecosystem in general and should be useful more broadly across Department of War (DoW) (legally operating as the Department of Defense (DOD)) and other U.S. Government missions. The success of this program and individual awards in the program will crucially depend upon the Government program team's deep continuous understanding of the overall technical plans, status, and challenges of the performers to their development of a fault-tolerant quantum computer, on a continuing basis during the program. The delivery of a commercial scale fault-tolerant quantum computer is not within the scope of this Notice. Although not anticipated, possible follow-on efforts may lead to the development of prototypes and production.

Synopsis:

The Army Research Office (ARO), in partnership with the Laboratory for Physical Sciences (LPS), is seeking proposed research and development solutions under the Broad Agency Announcement (BAA) W911NF23S0001 for Basic and Applied Scientific Research in Quantum Computing. The topic for this Special Notice is "Quantum Ecosystem Advancement, Growth & Leadership (QuantumEAGLe)." Upon receipt, compliant proposals will be reviewed through a technical and programmatic process in accordance with the evaluation criteria referenced in this Special Announcement to determine which proposal may be awarded an "Other Transaction Research Agreement" (OTA) under this topic.

This Broad Agency Announcement (BAA) which sets forth research areas of interest to the Army Research Office (ARO) is issued under 10 U.S.C. 4021, and 10 U.S.C. 4022 which provides for the competitive selection of proposals and will not be considered a FAR based award. Proposals submitted in response to this Special Notice and selected for award are considered to be the result of full and open competition.

The Department of War agencies involved in this program reserve the right to select for award; all, some, or none of the proposals submitted in response to this Announcement. The participating DoW agencies will provide no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this Announcement will not be returned. It is the policy of participating DoW agencies to treat all proposals as sensitive, competitive information and to disclose their contents only for the purposes of evaluation.

The Government reserves the right to cancel this Special Notice without award for any reason or for no reason. Issuance of this Notice does not commit the Government to pay for any preparation costs incurred in compiling a response. As a general matter, most requirements referenced in BAA W911NF23S0001 apply to this effort.

A. Funding Opportunity Description

The Army Research Office (ARO), in partnership with the Laboratory for Physical Sciences (LPS) is soliciting proposals for research to accelerate the US quantum computing ecosystem and to retire challenges and hurdles to advance the development of fault-tolerant quantum computers (FTQC). Development of a viable fault-tolerant quantum computer is potentially groundbreaking with respect to national priorities, but there remain significant challenges that require breakthroughs across many fronts to include supply chain, algorithms (including error correction) and continued foundational research and science. Quantum computing hardware continues to make rapid progress, particularly in the quality and number of available qubits. Today, commercial systems regularly contain hundreds of qubits; moreover, several efforts have demonstrated large arrays with two-qubit fidelities of 99% or better. These advancements have enabled the implementation of deep circuits, and in particular initial demonstrations of quantum error correction (QEC), which is widely considered to be the key technique required to enable future FTQC. Many companies, large, small, and start-up, have developed roadmaps and business plans for a commercially viable fault-tolerant quantum computer with widely varying timelines. However, many hard and emergent challenges in these roadmaps likely present significant roadblocks to commercial plans, not all of which may be in the companies' control. The objective of this Announcement is to catalyze progress in the US quantum computing ecosystem by focusing on three topics: improving the quantum computing supply chain, developing advanced algorithms, architecture and error correction techniques, and addressing foundational challenges. These topic areas will foster a robust quantum ecosystem enabled through strategic partnerships and collaborations. See Section A.5 for Teaming, Section B. for Award Information, and Section C. for Eligibility.

The Topic Areas are as follows:

- (1) Improvements to Supply Chain
- (2) Algorithms, and Quantum Error Correction Techniques
- (3) Foundational Research Topics

The success of this program and individual awards in the program will crucially depend upon the Government program team's deep understanding of the overall technical plans, status, and challenges faced by the performers to their development of a fault-tolerant quantum computer, on a continuing basis during the program.

Detailed Topic Descriptions

A.1. Improvements to Supply Chain

The development and commercialization of utility-scale quantum computing technologies are potentially constrained by bottlenecks in the supply chain. Alleviating these will require boosting performance, availability and scalability of unique bespoke quantum computing components, and reliable sources of high-purity materials. Enhancing the supply chain is crucial for utility-scale quantum computing systems and the quantum ecosystem at large. Proposed solutions to roadblocks in this topic area should include implementation and validation in commercial systems roadmaps. See A.5 Teaming. Key supply chain improvements may also have applications outside the quantum computing application space. Each proposal should:

- Describe the state-of-the-art approach to the critical supply chain element, the limitations of the current approach, the advantages and challenges associated with the proposed effort and the scale at which the element is required
- Describe the production of products to be broadly available across the quantum computing ecosystem
- Describe the development of a specific commercialization plan for the supply chain element across the US quantum computing ecosystem

Focus Areas: This Special Notice addresses the following areas within supply chain:

- Upgrades to existing US supply chain elements needed to meet future utility scale quantum computing requirements.
- Development of US-based manufacturing lines to meet the demand of the US quantum computing ecosystem
- Creation of new supply chain elements unavailable anywhere outside of bespoke devices built in-house

Examples: The following potential proposal themes are provided to guide the proposing teams on the scope of solicited proposals. These themes are not meant to be all-inclusive examples of potential supply chain work:

- Laser systems for trapped ions and neutral atom approaches: Stable, high-precision/purity laser systems are needed which can cater to the various operational wavelengths that can range from ~300 nm to 1100 nm for atomic species such as Ca, Yb, Ba, Sr, Rb, and Cs. Requirements could include wavelengths, linewidths, intensity fluctuation, frequency stability, power, etc.
- High density cables: Cryogenic systems often require high density cabling in and out of the cold space. Requirements could include bandwidths, loss, density, thermal conductance, operational temperatures, etc.
- Optical components: High-quality optical components, including lenses, mirrors, and active beam steering and manipulation components are crucial for efficiently directing and controlling laser beams. Requirements could include wavelengths, number of pixels, speed (if active), operational temperature, power handling, etc.
- Photonic Integrated Circuits (PICs): Development of robust PIC PDKs are essential to realizing simplified trapped-ion systems. These PICs must feature multi-layer stacks of integrated materials:
 - Phase and frequency-stable waveguiding for the various operational wavelengths
 - Grating couplers to direct laser beams to the ion species,
 - High-speed (MHz), high-fidelity switching and modulation with minimal power dissipation
 - Detection capabilities for efficient readout, etc.
- Other example topics include cryogenic amplifiers and filters at mK and microwave frequencies, low-loss microwave cables for interconnects, high-purity materials, dynamic beam-steering components, photonic interconnect technology, etc.

A.2. Algorithms and Quantum Error Correction Techniques

a. Quantum Computing Algorithms

The potential of quantum computing lies in its ability to solve complex problems more efficiently than classical computers. However, developing algorithms that can fully exploit quantum hardware remains a significant challenge. Creating efficient and practical quantum algorithms is essential for realizing the benefits of quantum computing for various applications. The scope of this topic is limited to activities

prioritizing the development of novel algorithms and primitives designed to be implemented on gate-based fault-tolerant quantum computers. Proposed solutions to roadblocks in this topic area should include implementation and validation in commercial systems roadmaps. See A.5 Teaming.

Focus Areas: This Special Notice addresses the following areas within the Algorithms sub-topic:

1. Discovery of Novel Algorithm Approaches

- **Objective:** Invent fundamentally new theoretical frameworks for quantum speedup. This area seeks the discovery of novel algorithms and FTQC heuristic models, whether inspired by abstract mathematical structures or the demands of a specific, hard problem. The focus is the discovery of verifiable speedups for classically hard problems on gate-based, fault-tolerant quantum computers.
- **Example Topics:** Developing new algebraic, combinatorial, or topological algorithms; creating novel, non-variational heuristic frameworks for FTQC; using the structure of a classically intractable problems to inspire a tailored quantum primitive.

2. Resource-Aware Algorithm Design & Compilation

- **Objective:** Bridge the gap between logical algorithms and practical physical execution. This area focuses on creating "natively efficient" algorithms and the co-design tools required to compile, map, and realistically assess them on FTQC hardware. Note: *proposals in this area may utilize established scientific or commercially valuable FTQC quantum algorithms as baselines or test cases.*
- **Example Topics:** Discovering algorithms inherently optimized for FTQC hardware constraints; building advanced compilers designed for algorithmic invention; developing tools for high-fidelity resource estimation of novel algorithmic concepts.

3. Development of Foundational Benchmarking

- **Objective:** Establish a portfolio of canonical "challenge problems" that are explicitly chosen to be representative of broad scientific, industrial, and DoW mission-relevant application domains. The goal is to create scalable and verifiable standards that can meaningfully measure logical algorithmic progress, hardware-aware Quantum Error Correction efficacy, and, in areas like physical simulation, data analysis, and complex optimization, providing a direct line of sight between algorithmic performance and real-world utility.
- **Example Topics:** Developing a benchmark based on simulating a physical system with known, verifiable properties; creating a "problem generator" for a specific class of optimization with tunable classical hardness; formalizing the criteria for a "gold-standard" quantum benchmark.

b. Quantum Error Correction

Quantum Error Correction (QEC) is a critical aspect of building a FTQC. Quantum systems are highly susceptible to errors, and developing effective error correction techniques is essential to achieving logical qubits with noise levels tolerable for implementing algorithms at scale. QEC techniques have made significant progress over recent years, and this topic aims to marry realistic quantum computing hardware limitations with theoretical constructs to understand ultimate achievable error rates and the associated overheads.

Focus Areas: This Special Notice addresses the following areas within the QEC sub-topic:

1. Foundational QEC Theory & Novel Code Discovery

- **Objective:** Discover and formalize fundamentally new QEC codes and fault-tolerant protocols that offer superior theoretical scaling and reduced resource overhead, independent of immediate physical hardware constraints.
- **Examples:** Developing new families of quantum Low-Density Parity-Check (qLDPC) codes, subsystem codes, or topological codes with favorable asymptotic limits; developing novel fault-tolerant logical gate constructions.

2. QEC for Hardware (Software/Math adapting to Physical layers)

- **Objective:** Co-design QEC codes and logical architectures to maximally exploit the unique physics, topologies, noise characteristics, and native operations of specific qubit modalities.
- **Example:** Developing hardware-tailored codes (e.g., noise-biased codes, qLDPC) and architectures that minimize routing overhead and avoid expensive logical operations.

3. Efficient Decoders

- **Objective:** Optimize classical decoding algorithms to process syndrome data at speeds that outpace error accumulation. Ensuring classical decoders do not become a bottleneck for fault-tolerant operation
- **Example:** Explore efficient implementations of correlated decoders on measured syndromes during code-switching. Development of high-bandwidth/low-latency decoding algorithms for classical hardware (FPGAs/ASICs) tailored to specific QEC codes.

4. Circuit-Scale Calibration

- **Objective:** Implement dynamic, real-time calibration to maintain optimal QEC performance across complex circuits.
- **Example:** Leverage syndrome information and erasure flags to dynamically influence real-time physical qubit or decoder hardware calibration.

5. Advanced Characterization

- **Objective:** Advance Logical Quantum Characterization, Validation, and Verification (QCVV) methodologies from physical qubits to the logical level.
- **Example:** Simulate and experimentally assess logical qubit noise (including non-Markovian effects) given a physical error model, developing rigorous logical QCVV protocols to accurately validate fault-tolerant claims. Demonstration of such techniques on real hardware.

A.3. Foundational Research Topics

Quantum computing technologies face several significant challenges that vary in scale and significance depending on the specific qubit technology. Research in these foundational research topics encourages knowledge-sharing and utilizes diverse expertise across the research community that will be essential for advancing the field. Research in these topics is essential for advancing the US ecosystem at large to overcome existential challenges facing key quantum computing technologies. Proposed solutions to roadblocks in this topic area should include implementation and validation in commercial systems roadmaps. See A.5 Teaming.

Focus Areas: This Special Notice addresses the following example focus areas within the Foundational Research topic. These examples are meant to be illustrative, but not fully inclusive:

- **Noise:** Decoherence and noise plague all qubit platforms, but the physical mechanisms of such noise differ from technology to technology. For instance, fabrication imperfections introduce defects that degrade qubit performance across solid state devices, such as two-level systems which particularly affect superconducting qubits, while trapped ion qubits suffer from spurious ion heating as well as atom loss. Examples of noise studies of interest include (but not limited to):
 - **Superconducting qubits:** Addressing defects that cause inhomogeneous loss; developing low-loss dielectric materials and enhancing coherence times
 - **Trapped ion qubits:** Mitigating decoherence due to motional heating and magnetic field fluctuations; implementing advanced cooling techniques and magnetic shielding to improve coherence
 - **Neutral atom qubits:** Effects of background radiation such as collision on atoms, reducing leakage, minimizing atom loss, and implementing feedback to compensate for environmental effects

- **Quantum dot qubits:** Reducing decoherence from charge noise and nuclear spin fluctuations; exploring isotopically enriched materials and dynamic decoupling techniques to extend coherence times
- **Simulation & Design Tools:** While experimental studies of noise sources can establish paths to their resolution, understanding of the fundamental limits of noise requires robust physical simulation tools alongside experiment. An essential part of this effort would be to team broadly to validate tool performance across a broad range of devices, and feedback experimental results to tool developers. A specific example of this work would include open-source physical modeling tools for various qubit platforms enabling exploration of novel design, control, and readout schemes and their fundamental noise limits.
- **Characterization:** Quantum characterization protocols can establish common performance metrics across different devices and laboratories, even spanning multiple technology platforms. An example topic is the analysis of benchmarking protocols to establish common metrics of comparison across devices, test platforms, and qubit modalities.
- **Other Foundational Research topics:** Submissions proposing collaborative research in other clearly identified foundational research topics that may retire significant challenges to roadmaps are encouraged.

A.4. Proposal Categories

Two categories of proposals are encouraged for this Announcement: Accelerators and Incubators. Every proposal should be detailed for the first year, with key milestones to evaluate renewal for the next year. Each year will be re-negotiated as option years, on a yearly basis, where Accelerators are anticipated to include 3 extension years and Incubators are anticipated to include 1 extension year. Each submission will be expected to submit a written white paper, incorporate feedback from the ARO/LPS team, and prepare an oral proposal (see details below). A core part of the proposal review process will be a deep understanding of how the proposed research aligns with the Offeror's quantum computing roadmap as well as the larger commercialization strategy. If necessary, LPS/ARO will consider smaller additional oral presentation sessions with each quantum computing company submitting proposals after the full proposal group oral presentation to discuss propriety information unsuitable for all collaborators.

- a. **Accelerators:** These are proposals from companies with established roadmaps and funding structure for commercial quantum computers. Plans in this category are expected to be detailed for the first year, with broad plans for future years. For planning purposes, four-year visions should be discussed with more detailed out-year plans developed as the project evolves during the yearly renewal phases. For planning, funding less than \$15M/year can be anticipated. Larger funding requests will require strong justification and project plans.
- b. **Incubators:** These are proposals from early-stage companies with roadmaps and funding structure for a commercial plan in early stages of development. Plans for this category are expected to establish feasibility over a two-year period of the technical approach and the funding structure approach. During these two years, a vision for quantum computing commercialization and implementation, including financing, should be developed and detailed. For planning, funding less than \$8M/year can be anticipated over the two-year duration of an Incubator project. Larger funding requests will require strong justification and strong project plans.

A.5. Teaming

Comprehensive teaming is anticipated to fill critical needs for proposed plans and is encouraged. Teams are highly encouraged to be led (Prime) by the entity with a central commercial roadmap, with responsibility and control to meet project milestones and deliverables. Teams must include all necessary expertise (e.g.,

theory, materials, fabrication, verification, validation) to meet proposed project goals. Academic team members are encouraged for innovative solutions to roadmap obstacles. Such teaming plans should consider academic functions of education, training, and publications in harmony with the pursuit and development of proprietary information by the other team partners. Collaborations with FFRDCs, UARCs, and other government entities may be considered for critical needs, within the constraints of the primary missions of these institutions. Resource share by the Prime (or others) may be an avenue for strong teaming among the various types of potential partners. White papers should detail how and which type of information will be shared with proposal subs/collaborators. The White Paper should also detail the type of information that can only be shared with the ARO/LPS team.

Summary Teaming Considerations

- State-of-the-art expertise and capabilities that may be necessary to overcome subsets of challenges to the quantum computing company roadmap. Such expertise may reside in academia, national laboratories, or other companies. Example topics are theory, materials, fabrication, verification and validation, and other such areas that may not typically be part of the quantum computing company.
- If the quantum computing company is not serving as the Prime contractor, it must still play a critical role. Specifically, a company focused on commercializing a fault-tolerant quantum computer must be actively involved to ensure the work is relevant and can be tested within that company's development roadmap. Examples of relevance include scale of the platform, realistic system limitations such as connectivity, available gate sets and noise models, etc.
- Consider if proprietary information is a hinderance to the rapid progress by the team.

B. Federal Award Information

Anticipated awards will be made in the form of Other Transactions Agreements and are subject to the availability of appropriations. The Army Contracting Command-Aberdeen Proving Ground, Research Triangle Park (ACC-APG RTP) Division has the authority to award Other Transactions Agreements on behalf of Army Research Office (ARO). Proposers should familiarize themselves with these instrument types and the applicable regulations before submitting a proposal. Following are brief descriptions of Other Transaction Agreements.

B.1. Other Transaction for Research

A legal instrument, consistent with 10 U.S.C. 4021, which may be used for basic, applied, and advanced research projects. The research covered under this instrument cannot be duplicative of research being conducted under an existing DoW program. To the maximum extent practicable, OTs for research are to provide for a 50/50 resource share between the Government and the applicant. An applicant's resource share may take the form of cash, independent research and development (IR&D), foregone intellectual property rights, equipment, access to unique facilities, and/or other means. Due to the extent of resource share, and the fact that an OT for research does not qualify as a "funding agreement" as defined at 37 CFR 401.2(a), the intellectual property provisions of this instrument can be negotiated to provide expanded protection to an applicant's intellectual property. No fee or profit is allowed on OTs for research. Please refer to the Office of the Under Secretary of Defense for Acquisition and Sustainment Other Transaction Guide version 2.0 dated July 2023 for additional information. This document, along with additional Other Transaction Agreement (OTA) resources, may be accessed at the following link: <https://www.acq.osd.mil/asda/dpc/cp/policy/other-policy-areas.html>

B.2. Other Transaction for Prototype or Production.

A legal instrument, consistent with 10 U.S.C. 4022, which provides DoW the flexibility necessary to adopt and incorporate business practices that reflect commercial industry standards and best practices into its award instruments. OTs for prototypes or production are not FAR-based procurement contracts, grants, cooperative agreements, or OTs for Research. OTs for prototypes or production have specific applications and conditions for use (see Appendix C of the Other Transactions Guide linked below).

The effort covered under an OT cannot be duplicative of effort being conducted under an existing DoW program. The term "prototype project" includes a project that addresses-

(A) a proof of concept, model, or process, including a business process.

(B) reverse engineering to address obsolescence.

(C) a pilot or novel application of commercial technologies for defense purposes.

(D) agile development activity.

(E) the creation, design, development, or demonstration of operational utility; or

(F) any combination of subparagraphs (A) through (E). Follow-on production contracts and/or an OT may be awarded to a Prototype Other Transaction Awardee, if applicable and deemed successfully completed. The term "follow-on production contract or transaction" means a contract or transaction to produce, sustain, or otherwise implement the results of a successfully completed prototype project for continued or expanded use by the Department of War. Please refer to the Office of the Under Secretary of Defense for Acquisition and Sustainment Other Transaction Guide version 2.0 dated July 2023 for additional information. This document, along with other OTA resources, may be accessed at the following link: <https://www.acq.osd.mil/asda/dpc/cp/policy/other-policy-areas.html>

Successfully Completed. A transaction for a prototype project is complete upon the written

determination of the appropriate approving official for the matter in question that efforts conducted under a Prototype OT (1) met the key technical goals of a project, (2) satisfied success metrics incorporated into the Prototype OT, or (3) accomplished a particularly favorable or unexpected result that justifies the transition to production. Furthermore, successful completion can occur prior to the conclusion of a prototype project to allow the Government to transition any aspect of the prototype project determined to provide utility into production while other aspects of the prototype project have yet to be completed. Success metrics may be further specified and negotiated for individual awards on a case by case basis.

1. Data and Intellectual Property (IP) rights are negotiable. The Government generally seeks Government Purpose rights for IP and data/software developed under this effort. The Government acknowledges and will protect the Offeror's pre-existing commercial Intellectual Property. Offerors must submit an IP assertion list detailing any restrictions on Government use. The Government generally does not seek any rights to background IP, but reserves the right to negotiate on a case-by-case basis. The Government reserves the right to not award to an otherwise meritorious proposal in the event that the parties cannot agree on sufficient IP rights and protection.

C. Eligibility Information

- a. For-profit, nonprofit organizations and non-traditional defense contractors (NDC)
- b. Institutions of higher education to the extent that such participants comply with Controlled Unclassified Information (CUI) requirements and publication restrictions.
- c. Non-U.S. organizations and/or individuals to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.
- d. To make a Prototype OT award, at least one of the following conditions must be satisfied:
 1. There is at least one NDC* or non-profit research institution participating to a significant extent in the prototype project; or
 2. All significant participants in the transaction other than the Federal Government are small businesses or NDCs;
 3. At least one-third of the total cost of the prototype project is to be paid out of funds provided by parties other than the Federal Government.

*An NDC is defined as an entity that is not currently performing and has not performed, for at least the one-year period preceding the solicitation of sources by DoD for the procurement or transaction, any contract or subcontract for the DoD that is subject to full coverage under the cost accounting standards (CAS) prescribed pursuant to section 1502 of 36 title 41 and the regulations implementing such section (see 10 U.S.C. §3014). In accordance with 48 CFR 9903-201-2, full CAS coverage applies as follows:

“(a) Full coverage. Full coverage requires that the business unit comply with all of the CAS specified in part 9904 that are in effect on the date of the contract award and with any CAS that become applicable because of later award of a CAS-covered contract.

Full coverage applies to contractor business units that—

- (1) Receive a single CAS-covered contract award of \$50 million or more; or
- (2) Received \$50 million or more in net CAS-covered awards during its preceding cost accounting period.”

D. Application and Submission Information

General Guidelines: The following general guidelines apply to both the abstract and full proposal package submissions:

- Elaborate brochures or marketing materials should not be included; only information relevant to the submission requirements or evaluation criteria should be included.
- Use of a diagram(s) or figure(s) to depict the essence of the proposed solution is permitted.
- All proposer submissions must be unclassified.
- Proposers are responsible for clearly identifying proprietary information in all submitted or presented materials. Submissions containing proprietary information must clearly mark the cover page and each page containing such information with a label such as “Proprietary” or “Company Proprietary.” NOTE: “Confidential” is a classification marking used to control the dissemination of U.S. Government National Security Information as dictated in Executive Order 13526 and should not be used to identify proprietary business information.
- Submissions sent through other media, channels, or after the prescribed deadline will not be considered, reviewed, or evaluated.

D.1. White Paper submission:

White Paper and Proposals must be submitted in accordance with the preparation and submissions instructions under this Notice.

White Paper Format and Content:

- White papers must be submitted electronically to usarmy.rtp.devcom-arl.mesg.qcbox@army.mil in the following format:
- Single PDF file as an email attachment
- Page Size: 8 ½ x 11 inches
- Margins – 1 inch
- Font – No smaller than Times New Roman, 12 point
- Number of Pages – any pages exceeding the page limits described next will not be evaluated.

White Papers must contain the following:

- Title page. The title page should be labeled “QuantumEAGLe Special Notice White Paper” and should include the BAA number, proposed title, program goal being addressed, Principal Investigator (PI) with telephone number and email address, and an executive summary. (Not to exceed one page.)

- Expected expenditures and justifications. (Not to exceed one page.)
- Team, capabilities, and key personnel sketches. (Not to exceed one page per team)
- Technical portion including all references and figures. Clearly identify the proposed solution to a FTQC roadmap obstacle in alignment with this Special Notice goals, briefly survey related work, outline technical approach to the proposed solution with well-defined objectives, outline the yearly research plan with milestones, in greater detail for the first year of the program and broadly for the remainder of the proposed program, and state the impact if successful. Identify key obstacles and challenges (Not to exceed ten pages.)

D.2. Submission Dates and Times:

White Papers (Required): Due 30 September 2026

White Papers must be submitted electronically via e-mail to

usarmy.rtp.devcom-arl.mesg.qcbox@army.mil

and received at the Army Research Office. The email subject line should contain the following: W911NF23S0001 QuantumEAGLe White Paper.

White Papers may be submitted on a rolling basis up until the date and time listed in this Special Notice. Early submission of White Papers is encouraged for early consideration. Feedback on the White Papers will be e-mailed directly to the proposed principal investigators. White Papers received after the deadline will not be evaluated for this Announcement.

D.3. Full Proposal Package Submission Guidelines

Full Proposal Package. A proposal package will only be accepted from invited organizations as discussed above. Those invited to submit a full proposal package will receive final templates and instructions within their abstract response letter. Full proposal packages from these organizations will be accepted on a rolling basis until the proposal due date and time outlined in this Notice. The Government intends to provide a list of questions approximately one week in advance of the scheduled Oral Presentation to give proposers an opportunity to consider their response in advance. A common set of questions is anticipated among all presenters, along with a set of questions specific to the individual full proposal. The Government will review conforming full proposal packages against the stated evaluation criteria, and meritorious proposers will be invited to enter negotiations for an OT award. Proposal Packages will not be made public or provided to other proposers.

D.3.a. Full Proposal Format

The invitation to submit a full proposal package will include templates for both written and oral technical components as well as pricing and budget spreadsheets. In general proposers will be asked to describe their concept, as well as timelines, roadmaps, and information on current R&D efforts. If a proposer is invited to submit a full proposal package, the invitation will provide specific submission instructions, including content submission guidelines. Please note that only full proposal packages from proposers who have received an official invitation in response to white paper will be reviewed.

D.3.b. Oral Presentations

Oral Presentation Requirement.

Oral Presentation Format. Oral Presentations will consist of one presentation followed by a question and answer (Q&A) session. Q&A during the presentation will be of an immediate clarifying nature. Additional instructions will be provided within the Proposal Invitation Package.

D.3.c. Full Proposal Package Submission

The full proposal package will be due on the date and time provided within the invitation letter which will be no later than the date and time listed in this Notice.

E. Application Review Information

E.1. White Paper Evaluation Criteria

White Papers will be evaluated against the evaluation criteria, of equal weight, listed below.

- (i) Technical Approach: The proposed approach establishes technical plausibility for achieving the stated goals, milestones, and impact.
- (ii) Technical Ability: The proposer's team, organizations, and key personnel can realize the proposed path to the stated goals and timeline.

Upon review of White Paper, the Government may elect to invite all, some, or none of the proposers to submit full proposal packages. ARO will provide an evaluation response to all submitted White Papers.

E.2. Oral and Full Proposal Evaluation Criteria

(a). All Oral Presentations, and Full Proposals submitted in response to the invitation for full proposals, will be evaluated and a recommendation to advance to the negotiation step be made on the following criteria that are of equal importance and considered most advantageous offer to the Government.

(i) Scientific and Technical Merit of the Proposed Research

Overall scientific and technical merit of the proposal is substantiated, including unique and innovative methods, approaches, and/or concepts. The proposal clearly articulates an understanding of the problem to be solved. The technical approach is credible and includes a clear assessment of primary risks and a means to address them. The feasibility and likelihood that the proposed approach will satisfy the program's milestones and metrics are explicitly described and clearly substantiated along with risk mitigation strategies for achieving stated milestones and metrics. The proposed research advances the state of the art.

(ii) Potential Contribution of the Research to the Program Goal and DoW Missions

The proposed solution meets the stated program goals and all elements within the proposal exhibit a comprehensive understanding of the problem. The proposal clearly addresses how the proposed effort will meet and progressively demonstrate project goals. The proposal describes how the proposed solution contributes to DoW's mission to invest in high-risk/high-payoff research that can provide the U.S. with an overwhelming advantage over its future adversaries.

(iii) Experience and qualifications of the principal investigator, other key research personnel, and the overall team participating in the proposal

The Proposers capabilities, related experience, facilities, techniques, or unique combination of these which are integral factors for achieving the proposal's objectives will be evaluated, as well as qualifications, capabilities, and experience of the proposed principal investigator, team leader, and key personnel critical to achieving the objectives of the proposal. Time commitments of key personnel must be sufficient for their proposed responsibilities in the effort.

E.2(b). Review and Selection Process

- a. The proposal selection process will be conducted based upon a technical review by a panel of government scientists and may use outside evaluators with a signed conflict of interest and non-disclosure agreement, according to the evaluation criteria specified in Section E.2 (Criteria). Each proposal will be evaluated based on the merit and relevance of the specific proposal as it relates to the research topic rather than against other proposals for research in the same general area. Proposals will not be rated according to a formal adjectival rating scale.
- b. Upon completion of an evaluation against the criteria in Section E.2, a proposal identified for possible award will be analyzed for the realism and reasonableness of costs and funds availability. Proposal costs must be determined reasonable and realistic before the Government can make an award.
- c. While it is the Government's intention to make awards based on submitted proposals, the contracting officer, in his or her discretion, may choose to conduct post-selection negotiations with a specific offeror on any topic deemed necessary for the purpose of allowing that offeror to revise and improve its proposal. Resource sharing could be included in this phase of the negotiations.
- d. Research Risk Assessment.
 - i. All proposals identified for potential award are subject to a Department of War (DoW) Risk-Based Security Review Process to identify and mitigate undue foreign influence, consistent with National Security Presidential Memorandum (NSPM)-33 and Undersecretary of War for Research and Engineering (OUSW(R&E)) policy. The Government may conduct this review by evaluating proposal documents, key personnel resumes, and any required disclosure forms, as well as independent information, to assess affiliations or associations that "Covered Individuals" may have with Foreign Countries of Concern (FCOC) or FCOC-connected entities. *Covered Individuals* are defined as key personnel, including the Principal Investigator(s) and any other individuals who contribute in a substantive, meaningful way to the execution of the proposed effort.
 - ii. Development of Risk Mitigation Measures: In instances where the risk-based security review identifies potential concerns that are deemed manageable by the Government, the DoW reserves the right to require the development of specific risk mitigation measures. These measures will be drafted in coordination with the offeror/performer and may include, but are not limited to, the substitution of personnel, the implementation of information firewalls, or enhanced reporting requirements. Agreed-upon mitigation language and/or a formal Risk Mitigation Plan (RMP) will be incorporated into the final contract or OTA as a binding requirement for performance. If a security concern cannot be sufficiently mitigated, the Government reserves the right to not award to an otherwise meritorious proposal.
 - iii. Ongoing Disclosure and Mitigation: If, prior to award or at any time during the performance of an awarded contract or OTA, the offeror/performer learns that it, its Covered Individuals, or its subcontractors/subtier performers are participating in a Malign Foreign Talent Recruitment Program or receiving undisclosed funding from an FCOC, the performer must notify the Contracting Officer or Agreements Officer within five (5) business days. The disclosure must include specific personnel involved

and the nature of the relationship. The Government retains the right to conduct fact-finding, mandate risk mitigation measures, conduct recurring audits, and terminate the award based on security concerns, subject to the Agreement's termination clause. The performer must flow down this provision to any subtier contracts or agreements involving direct participation in the performance of the research or execution of the project.

E.3. OT Award Negotiation.

The Government will review full proposal packages, to include the Oral Presentation, to determine which proposed solutions sufficiently meet the evaluation criteria stated in this Notice and are most advantageous to the Government. Identified proposals that are successfully negotiated will result in the award of either a Research OT or Prototype OT. The Government will not pay offerors responding to this solicitation for the costs associated with proposal preparation and submission. The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this solicitation, and to make awards without negotiation with proposers. The Government also reserves the right to conduct discussions if it is later determined to be necessary. If warranted, portions of resulting awards may be segregated into pre-priced options.

F. Award Information

Selected proposals that are successfully negotiated will result in the award of either a Research OT or a Prototype OT. While proposers may request a specific OT type in their submission, the Government retains sole discretion to determine the appropriate OT type based on the nature of the proposed effort and statutory requirements. The Agreements Officer reserves the right to negotiate directly with the offeror on the terms and conditions prior to execution of the resulting OT agreement, including payment terms, and will execute the agreement on behalf of the Government. An otherwise meritorious proposal may not receive an award if negotiations are unsuccessful. Only a Government Agreement Officer has the authority to enter into, or modify, a binding agreement on behalf of the United States Government.

In order to receive an award:

- a. Proposers must be registered in the System for Award Management (SAM) <https://sam.gov/> at time of proposal submission and must maintain an active registration for 'All Awards' throughout the life of any resulting award.
- b. Proposers will be required to submit invoices for payment electronically via Wide Area Work Flow (WAWF) at <https://wawf.eb.mil>, unless an exception applies. Registration in WAWF is required prior to award.
- c. Proposers must be determined to be responsible by the Agreements Officer and must not be suspended or debarred from award by the Federal Government nor be prohibited by presidential executive order and/or law from receiving an award.

G. Agency Contact

Questions of a technical nature or a programmatic nature shall be directed as specified below:

Technical Program Point of Contact (ARO):

Dr. T.R. Govindan

Army Research Office

Email Address: t.r.govindan.civ@army.mil

Questions of a business nature shall be directed to the contact info, as specified below:

Email address: usarmy.rtp.devcom-arl.mesg.qcbox@army.mil

Comments or questions submitted should be concise and to the point, eliminating any unnecessary verbiage. In addition, the relevant part and paragraph of the Special Notice should be referenced.