DEVCOM Army Research Laboratory

BROAD AGENCY ANNOUNCEMENT FOR

TRAPPED IONS & NEUTRAL ATOMS QUANTUM COMPUTING (TINA QC)



W911NF24S0004

Issued by:

U.S. Army Contracting Command-Aberdeen Proving Ground

Research Triangle Park Division

P.O. BOX 12211

Research Triangle Park, NC 27709-2211

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I. OVERVIEW OF THE FUNDING OPPORTUNITY:

A. Required Overview Content

1. Federal Agency Name(s):

DEVCOM Army Research Laboratory – Army Research Office

Issuing Acquisition Office:
U.S. Army Contracting Command-Aberdeen Proving Ground, Research Triangle Park Division (ACC-APG RTP Division)

2. Funding Opportunity Title:

Trapped Ions & Neutral Atoms Quantum Computing (TINA QC)

3. Announcement Type: Initial Announcement

4. Research Opportunity Number: W911NF24S0004

5. Catalog of Federal Domestic Assistance (CFDA) Number:

12.431 – Basic Scientific Research

6. Response Dates:

White Papers: 4:00 PM Eastern Time on: 23 January 2024
Proposals: 4:00 PM Eastern Time on: 9 April 2024
See Section II. D. 4 for additional information.

B. Additional Overview Information

This Broad Agency Announcement (BAA) which sets forth research areas of interest to the DEVCOM Army Research Laboratory- Army Research Office (ARL-ARO) and the National Security Agency (NSA) is issued under paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), and 10 U.S.C. 4001, 10 U.S.C. 4021, and 10 U.S.C. 4022 which provides for the competitive selection of basic research proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provision of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments.

The Department of Defense 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 DoD 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 BAA will not be returned. It is the policy of participating DoD agencies to treat all proposals as sensitive, competitive information and to disclose their contents only for the purposes of evaluation.

II. DETAILED INFORMATION ABOUT THE FUNDING OPPORTUNITY

A. Funding Opportunity Description

DEVCOM Army Research Laboratory–Army Research Office (ARL-ARO) in partnership with the Laboratory for Physical Sciences (LPS) is soliciting proposals for research in **Trapped Ions & Neutral Atoms Quantum Computing (TINA QC)**. This is a proposed four-year program and is primarily focused on three topic areas in the field of quantum computing (QC) with trapped ions and neutral atoms.

The topic areas are as follows:

(1) Modular Atoms (MA):

- Primary Research Goal: Advance the state-of-the-art for remote two-qubit gates between two spatially separated modules to enable distributed quantum computing.

(2) Fast Atoms (FA):

- Primary Research Goal: Faster high-fidelity qubit operations, such as two-qubit gates or mid-circuit measurements, that correspondingly improves algorithm run-time.

(3) Versatile Atoms (VA):

- Primary Research Goal: Increase the versatility of atomic qubits through innovative concepts that preserve the advantages of such systems in a multi-qubit setting.

Research proposals to these topics are sought that address the circuit gate-based model of quantum computation, be suitable for universal control in multi-qubit architectures, and make progress towards fault-tolerant quantum computing.

A.1 Background and Overview of TINA QC

Trapped ions are a leading approach for qubit encoding in Quantum Computing with some of the highest reported fidelities for single qubit gates (99.9999%, [1]), two-qubit gates (99.94%, [2]), and measurement (>99.99% [3]). Furthermore, complex multi-qubit algorithms have been run on trapped ion systems with up to 32 qubits [4] and have demonstrated some of the most advanced logical qubit encodings to-date [5], [6]. However, many challenges remain, including slow qubit operations (local gates and readout) and limitations on long-range communications (such as across non-contiguous modules) and optimization of all required qubit operations simultaneously (for e.g.; cooling, loading, reset, gates, readout, replacement, transport, among others).

Recently, trapped neutral-atom QC has made rapid progress, trapping large numbers of atoms for entanglement in a single array [7]. Like trapped ions, neutral atoms possess both optical and microwave transitions that can be precisely addressed and manipulated for quantum information processing. Neutral atom systems have overcome challenges with respect to optical trapping, individual addressing, and destructive measurement limitations. Recent studies have shown neutral atom gate fidelities approaching those of trapped ions, achieving one- and two-qubit fidelity values >99.9% and 99.85% [8] respectively, and demonstrated mid-circuit measurement [9]–[11]. However, as with trapped ions, certain operations such as readout and atom replenishment are slow and often destructive. High-fidelity and high-rate modular demonstrations are still elusive, and simultaneous optimization of all required operations is challenging.

The research topic areas of this BAA aim to address some of the leading challenges discussed above and advance state-of-the-art in both trapped ion and neutral atom QC platforms.

A.2 Detailed Topic Descriptions:

A.2.1 Topic 1: Modular Atoms (MA)

A major challenge in quantum computing is the practical limitation of how many qubits one can reliably include in a single system. One architectural solution to this challenge is building many reproducible "modules" (either in the same or separate vacuum systems) and connecting them together quantum mechanically to build a larger QC processor. The research goal of the MA topic is to advance and demonstrate protocols for high-fidelity and high-rate gates between spatially separated qubits, which could be deployed in a such a modular architecture. Both neutral atoms and trapped ions take two main approaches to modular gates [12]–[15]: atom shuttling (aka transport) and photonic interconnects. However, both methods face significant challenges. Atom transport is limited to local connectivity and while atom transportation schemes have been investigated (for both neutral atoms with optical tweezers [16] and trapped ions with manipulating electrostatic potential [17]), achieving fast deterministic gates between two modules is challenging over large module-to-module distances. On-the-other-hand, photonic interconnects are limited by poor efficiency. The demonstrated fidelity and rate of photonic mediated entangling operations between modules has been limited thus far to 94% at 182 Hz [18] in trapped ion systems, which limits the ability to implement efficient operations across a modular system.

This research topic is soliciting proposals to demonstrate fast and practical remote two-qubit gates between two modules at a rate and fidelity that could enable distributed quantum computing. Proposed solutions may take the form of improved photonic and/or transport-based connectivity, or they may be novel, or previously unexplored methods for implementing long-distance gates. Inclusion of a theoretical analysis to motivate target performance parameters, via studying how specific algorithms could be run on various network topologies, is of interest. At a minimum, proposals responding to this research topic must target demonstration experiments with two modules, with at least two qubits in each module performing the demonstration.

Proposals should consider and define target fidelities and rates as well as articulate a research plan with research milestones throughout the period-of-performance. Furthermore, proposals should detail anticipated challenges associated with the chosen connectivity approach, and detail the plan to predict, measure and analyze gate errors and intrinsic physical limitations and bottlenecks. Figures-of-merit of interest could include crosstalk characterization, measurement fidelities, and additional noise that could be introduced by the chosen method of modular operations. Additionally, performance could be compared to predicted performance from a fully connected equivalent system in a single module.

A.2.2 Topic 2: Faster Atoms (FA)

While atomic systems have enabled world-leading operational fidelities, algorithm speeds are currently limited by kHz-rate or slower operations. However, there have been some recent advances in developing faster versions of some qubit operations [3], [19]–[21]. Building upon these recent advances, the research goal of the FA topic is to speed up one or more atomic-qubit operations that would impact total algorithm duration. Examples include two-qubit entangling operations, mid-circuit measurement, initialization, loading/replacement, cooling, and transport. Success would result in a reduction in total runtime (initialization-operation-measurement-initialization). The targeted faster operations should not degrade the ability to perform a high-fidelity universal gate set, and should avoid undesired effects such as crosstalk, loss, and correlated errors.

Proposed research approaches should identify and motivate which operation is the limiting factor in qubit circuit runtime, and detail the proposed approach for improving the chosen operation speed by many factors over current approaches. Proposals should discuss technical challenges associated with achieving these speedups and associated with implementing them in a multi-qubit environment. Of particular interest is exploration of the trade-offs among speed, operation fidelity, and associated multi-qubit compatibility, supported by theory and simulations.

A.2.3 Topic 3: Versatile Atoms (VA):

The majority of quantum computing experiments with cold atoms use a limited number of atomic states in a single atomic species to perform operations such as cooling, loading, reset, gates, and readout. The use of additional atomic states (e.g., shelving [22]) or additional species (e.g., for sympathetic cooling [23], [24]) have been previously demonstrated, but have been implemented sparingly to limit the complexity of the experiments. However, as quantum computing science progresses, the need for that added versatility is becoming increasingly necessary. Recent studies have attempted to increase versatility by moving to multi-species setups [25], [26] to enable more complex operations. By splitting the functionality between "helper" and "data" species, significant improvements in crosstalk, mid-circuit measurement, and even detecting environmental noise [26] have been enabled. In addition, there have been new ideas for taking advantage of auxiliary states within a single atom to increase versatility, such as the recent demonstration of optical-metastable-ground (*omg*) qubits [20], and Alkaline Earth-like Atoms (AEAs) [21]. The VA topic aims to explore further increases in the versatility of atomic qubits while preserving the strengths of atomic systems such as long lifetimes, robustness, uniformity, and high fidelities. An illustrative but not comprehensive list of approaches to atomic versatility include:

- Using multiple transitions for different operations in a single species, such as *omg* qubits [27];
- Using novel species such as Alkaline-Earth like atoms (AEAs) [8], [28];
- Converting errors to more amenable types; e.g., noise bias or erasures [28], [29];
- Using multiple atomic species to independently optimize disparate qubit operations [11];
- Utilizing d-dimensional Hilbert space (qudits) [30];
- Using novel encoding schemes, such as Bosonic codes [31].

In the VA topic, the focus is on demonstrating the versatile qubit property in conjunction with high fidelity state preparation, a universal set of qubit gates, and readout. Limitations on gate performance should be carefully characterized using appropriate methods and clearly described in the proposal.

This additional versatility, however, must not come with a degradation of the known, previously discussed, advantages of atomic systems. Proposals must clearly articulate the approach to increasing versatility, the advantages of the approach, the key questions that need to be answered or concepts that need to be proven, compatibility with a universal gate set, and a description of the limitations and key figures-of-merit for the approach. Consideration should be given to how the proposed versatility is extensible to a scalable approach to fault tolerance.

A.3 Proposal Guidance and End-of-Program Research Goals

One central theme of this BAA is for novel research approaches to modular gates, fast operations, and versatile qubits. As discussed above, proposals must include a clear research

plan to demonstrate the strength of the chosen approach and propose associated yearly research milestones to chart progress. Consideration should be given and articulated of the compatibility of the approach with a universal set of high-fidelity qubit operations in a multi-qubit environment. Another area of focus for the BAA are approaches that have seen more maturation. For such proposals, teams should consider demonstration of the strength of their approach by running an appropriate circuit, protocol, or algorithm on a multi-qubit system. This end-of-program goal should be motivated in the proposal, including quantifying impacts on overall system performance. Examples of end-of-program goals of interest may include randomized algorithms, GHz state generation, parity checks for error correction, surface codes, or repetition codes. Other end-of-program goals that are focused on illustrating the strengths of the research approach may also be proposed.

Proposals must include all the expertise needed to ensure success of the proposed research goals. Examples of relevant expertise includes quantum theory, modeling and simulation, quantum control, materials growth, characterization, and device fabrication.

Proposals may address multiple topic areas with clear compelling motivation and includes research that integrates the topic areas, especially with end-of-program research goals. A primary topic area must be identified.

A.4 Out of Scope

Topics which fall outside the research scope of this BAA:

- Solid-state qubit approaches, e.g., superconducting qubits, quantum dots, defect centers
- Photonic based quantum computing
- Molecular based quantum computing
- Quantum communication and key distribution
- Quantum annealing

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B. Federal Award Information

Anticipated awards will be made in the form of procurement contracts, grants, or cooperative agreements, Other Transactions Agreements and are subject to the availability of appropriations. Funding for the second year and beyond will be contingent upon satisfactory performance and the availability of funds.

The Army Contracting Command-Aberdeen Proving Ground, Research Triangle Park (ACC-APG RTP) Division has the authority to award a variety of instruments on behalf of Army Research Laboratory-Army Research Office (ARL-ARO). The ACC-APG RTP Division reserves the right to use the type of instrument most appropriate for the effort proposed. Applicants should familiarize themselves with these instrument types and the applicable regulations before submitting a proposal. Following are brief descriptions of the possible award instruments.

1. Procurement Contract

A legal instrument, consistent with 31 U.S.C. 6303, which reflects a relationship between the Federal Government and a State Government, a local government, or other entity/contractor when the principal purpose of the instrument is to acquire property or services for the direct benefit or use of the Federal Government.

Contracts are primary governed by the following regulations:

a. Federal Acquisition Regulation (FAR) https://www.acquisition.gov/browse/index/far
b. Defense Federal Acquisition Regulation Supplement (DFARS) https://www.federalregister.gov/defense-federal-acquisition-regulation-supplement-dfars-
c. Army Federal Acquisition Regulation Supplement (AFARS) https://www.acquisition.gov/afars

2. Grant

A legal instrument that, consistent with 31 U.S.C. 6304, is used to enter into a relationship:

a. The principal purpose of which is to transfer a thing of value to the recipient to carry out a public purpose of support or stimulation authorized by a law or the United States, rather than to acquire property or services for the DoD's direct benefit or use.
b. In which substantial involvement is not expected between the DoD and the recipient when carrying out the activity contemplated by the grant.
c. No fee or profit is allowed.

3. Cooperative Agreement

A legal instrument which, consistent with 31 U.S.C. 6305, is used to enter into the same kind of relationship as a grant (see definition "grant"), except that substantial involvement is expected between the DoD and the recipient when carrying out the activity contemplated by

the cooperative agreement. The term does not include "cooperative research and development agreements" as defined in 15 U.S.C. 3710a. No fee or profit is allowed.

4. 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 DoD program. To the maximum extent practicable, OTs for research are to provide for a 50/50 cost share between the Government and the applicant. An applicant's cost 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 cost 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

5. Other Transaction for Prototype or Production.

A legal instrument, consistent with 10 U.S.C. 4022, which provides DoD 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 DoD program. Follow-on production contracts and/or an OT may be awarded to a Prototype Other Transaction Awardee, if applicable. 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

6. Grants and cooperative agreements for Institutions of Higher Education, nonprofit organizations, foreign organizations, and foreign public entities

Legal instruments which are primary governed by the following:

a. Federal statutes.

b. Federal regulations.
c. 2 CFR part 200
d. 2 CFR part 1104.
e. 32 CFR Parts 21, 22, 26, and 28.
f. DoD R&D General Terms and Conditions.
g. Agency Specific Research Terms and Conditions

7. Grants and cooperative agreements for for-profit and nonprofit organizations exempted from Subpart E—Cost Principles of 2 CFR Part 200, are primarily governed by the following:

a. Federal statutes.
b. Federal regulations.
c. 32 CFR Part 34 – Administrative Requirements for Grants and Agreements with For-Profit Organizations
d. 32 CFR Parts 21, 22, 26, and 28
e. DoD Research and Development General Terms and Conditions
f. Agency-specific Research Terms and Conditions

8. OTs for Research

Legal instruments which are primarily governed by the following:

a. Federal statutes
b. Federal regulations
c. DoD Research and Development General Terms and Conditions
d. Agency-specific Research Terms and Conditions
e. Office of Secretary of Defense implementation guidance titled Other Transactions (OT) Guide for Research Projects (July 2023, Version 2)

9. OTs for Prototypes or Production

Legal instruments which are primarily governed by the following:

a. Federal statutes
b. Office of Secretary of Defense implementation guidance titled Other Transactions (OT) Guide for Prototype Projects (July 2023, Version 2)

The following websites may be accessed to obtain an electronic copy of the governing regulations and terms and conditions:

a. FAR, DFARS, and AFARS: https://www.acquisition.gov
b. Code of Federal Regulations (CFR): http://www.ecfr.gov
c. DoD Research and Development General Terms and Conditions: https://www.nre.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions
d. Agency-specific Research Terms and Conditions: https://arl.devcom.army.mil/resources/baa-forms/#terms-and-conditions

C. Eligibility Information

1. Eligible Applicants:

Eligible applicants under this BAA include Institutions of higher education (foreign and domestic), nonprofit organizations, and for-profit concerns (large and small businesses). Proposals are encouraged from Historically Black Colleges and Universities (as determined by the Secretary of Education to meet requirements of Title III of the Higher Education Act of 1965, as amended (20 U.S.C. §1061)) and from Minority Institutions defined as institutions "whose enrollment of a single minority or a combination of minorities exceeds 50 percent of the total enrollment." [20 U.S.C. § 1067k(3) and 10 U.S.C. § 2362]. However, no funds are specifically allocated for HBCU/MI participation.

2. Cost Sharing or Matching:

There is no requirement for cost sharing, matching, or cost participation to be eligible for award under this BAA and cost sharing and matching is not an evaluation factor used under this BAA.

3. Federally Funded Research and Development Centers (FFRDCs):

Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this BAA. However, teaming arrangements between FFRDCs and eligible principal offerors are allowed so long as such arrangements are permitted under the sponsoring agreement between the Government and the specific FFRDC, and no funds from the award flow to the FFRDC.
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D. Application and Submission Information

1. Address to View Broad Agency Announcement

This BAA may be accessed from the following:

1) Grants.gov (www.grants.gov)
2) SAM (https://www.SAM.gov)
3) ARL website (https://arl.devcom.army.mil/collaborate-with-us/)

Amendments, if any, to this BAA will be posted to these websites when they occur. Interested parties are encouraged to periodically check these websites for updates and amendments.

The following information is for those wishing to respond to the BAA:

2. Content and Form of Application Submission

a. General Information

A proposal submitted under this BAA must address unclassified fundamental research. Proposal submissions will be protected from unauthorized disclosure in accordance with applicable laws and DoD regulations. Applicants are expected to appropriately mark each page of their submission that contains proprietary information. The participating DoD 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 BAA will not be returned. It is the policy of participating DoD agencies to treat all proposals as sensitive, competitive information and to disclose their contents only for the purposes of evaluation.

Post-Employment Conflict of Interest: There are certain post-employment restrictions on former federal officers and employees, including special government employees (Section 207 of Title 18, U.S.C.). If an applicant believes a conflict of interest may exist, the situation should be discussed with Point of Contact listed in Section G: Agency Contacts, who will then coordinate with appropriate ARO/ARL legal personnel prior to having applicant expend time and effort in preparing a white paper or proposal.

Statement of Disclosure Preference: Please complete ARO Form 52 or 52A stating your preference for release of information contained in your white paper or proposal. Copies of these forms are available at
https://arl.devcom.army.mil/resources/baa-forms/
NOTE: A white paper or proposal may be handled for administrative purposes by support contractors. These support contractors are prohibited from competing on BAA proposals and are bound by appropriate non-disclosure requirements.

Equipment: Normally, title to equipment or other tangible property purchased with Government funds vests with nonprofit institutions of higher education or with nonprofit research organizations if vesting will facilitate scientific research performed for the Government. For profit organizations are expected to possess the necessary plant and equipment to conduct the proposed research. Deviations may be made on a case-by-case basis to allow commercial organizations to purchase equipment but disposition instructions must be followed.

b. Submission of a White Paper

White Papers – Prospective applicants **are strongly encouraged** to submit White Papers. The purpose of requesting a White Paper is to minimize the labor and cost associated with the production of a detailed proposal that has very little chance of being selected for funding. Based on assessment of the White Papers, feedback will be provided to an applicant to enable that applicant to make a determination as to whether they should submit a proposal. If offerors have not submitted White Papers under the BAA, offerors may still submit full proposals for consideration for funding.

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 "TINA QC BAA 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.)
- Curriculum vitae sketches. (Not to exceed one page per key personnel)
- Technical portion including all references and figures. Introduce the problem to be addressed, briefly survey related work, identify key obstacles, outline the proposed solution and well-defined objective, outline the yearly research plan with milestones, and state the impact if successful. (Not to exceed seven pages.)

c. Preparing a Proposal

After White Paper reviews are completed, interested offerors should submit proposals in accordance with the requirements set forth in this BAA.

This format applies to all proposals submitted via email and via Grants.gov. Offerors' proposals should show the location of each section of the proposal, as well as major subdivisions of the project description.

COVER PAGE:

1. A Cover Page is required. For contract proposals submitted by email, use ARO Form 51. For all Assistance instruments and contract proposals submitted via Grants.gov, use the SF 424 (R&R) Form. Proposals will not be processed without either: (1) a signed Cover Page, ARO Form 51, or (2) a SF 424 (R&R) Form.

2. Should the project be carried out at a branch campus or other component of the submitting organization, that branch campus or component should be identified in the space provided (Block 11 on the ARO Form 51 and Block 12 on the SF424 R&R).

3. The title of the proposed project should be brief, scientifically representative, intelligible to a scientifically literate reader, and suitable for use in the public domain.

4. The proposed duration for which support is requested should be consistent with the program duration of forty-eight months.

5. Specification of a desired starting date for the project is important and helpful however, requested effective dates cannot be guaranteed.

6. Pursuant to 31 U.S.C. 7701, as amended by the Debt Collection Improvement Act of 1996 [Section 31001(I)(1), Public Law 104-134] and implemented by 32 CFR 22.420(d), federal agencies shall obtain each awardees' Taxpayer Identification Number (TIN). The TIN is being obtained for purposes of collecting and reporting on any delinquent amounts that may arise out of an awardees' relationship with the Government.

7. Offerors must provide their organization's Unique Entity Identifier (UIE) (formerly DUNS). This number is a nine-digit number assigned by Dun and Bradstreet Information Services. See Section II.D.3 of this BAA for requirements pertaining to the Unique Entity Identifier.

8. Offerors must provide their assigned Commercial and Government Entity (CAGE) Code. The CAGE Code is a 5-character code assigned and maintained by the Defense Logistics Service Center (DLSC) to identify a commercial plant or establishment.

TABLE OF CONTENTS: Use the following Format for the Proposal Table of Contents, Forms are available at
https://arl.devcom.army.mil/resources/baa-forms/

SECTION	PAGE NUMBER
Table of Contents	A-1
Statement of Disclosure Preference (Form 52 or 52A)	B-1
Research & Related Other Project Information	B-2
Project Abstract	C-1
Project Description (Technical Proposal)	D-1 - D-□
Biographical Sketch	E-1 - E-□
Bibliography	F-1 - F-□
Current and Pending Support	G-1 - G-□
Facilities, Equipment, and Other Resources	H-1 - H-□
Proposal Budget	I-1 - I-□
Contract Facilities Capital Cost of Money (DD Form 1861)	J-1
Appendices	K-□
List Appendix Items: _____	

This format applies to proposals submitted via email and via Grants.gov. Offerors' proposals should show the location of each section of the proposal, as well as major subdivisions of the project description.

STATEMENT OF DISCLOSURE PREFERENCE (FORM 52 OR 52A): Complete and sign ARO Form 52 (Industrial Contractors) or ARO Form 52A (Educational and Nonprofit Organizations), form can be found at the following website: https://arl.devcom.army.mil/resources/baa-forms/

RESEARCH AND RELATED Other Project Information: The form entitled "Research and Related Other Project Information" found at the following website: https://arl.devcom.army.mil/resources/baa-forms/, shall be completed and signed by all organizations.

PROJECT ABSTRACT:

1. The Project Abstract shall be completed on the form entitled "Publicly Releasable Abstract" found at the following website: https://arl.devcom.army.mil/resources/baa-forms/

2. Unless otherwise instructed in this BAA, the Project Abstract shall include a concise statement of work and basic approaches to be used in the proposed effort. The abstract should include a statement of scientific objectives, methods to be employed, and the significance of the proposed effort to the advancement of knowledge.

3. The abstract should be no longer than one (1) page (maximum 4,000 characters).

4. The project abstract shall be marked by the applicant as publicly releasable. By submission of the project abstract, the applicant confirms that the abstract is releasable to the public. For a proposal that results in a grant award, the project abstract will be posted to a searchable website available to the general public to meet the requirements of Section 8123 of the DoD Appropriations Act, 2015. The website address is https://dodgrantawards.dtic.mil/grants

PROJECT DESCRIPTION (TECHNICAL PROPOSAL) : The technical portion of the proposal shall be no longer than 20 pages including tables and figures, single spaced text, size 12 Times New Roman font with one inch page margins, and shall contain the following:

1. Technical Approach: Introduce the problem to be addressed, survey related work, identify key obstacles, and outline the proposed solution and well-defined objective. Proposals should describe an approach to all technical areas with unambiguous and quantitative milestones. Proposers must justify the utility of the proposed work and highlight its benefits over the current state of the art. Proposals should clearly address the expected key challenges and proposed methods to overcome these difficulties taking into consideration the current state of field. Proposers should set aggressive yearly quantitative milestones that define a path toward the end-of-the-program goals and analyze the impact if successful.

2. Project Schedule, Milestones, and Deliverables: A summary of the schedule of events, milestones, and a detailed description of the results and products to be delivered.

3. Management Approach: A discussion of the overall approach to the management of this effort, including brief discussions of: required facilities; relationships with any subawardees and with other organizations; availability of personnel; and planning, scheduling, and control procedures. A brief description of your organization, including if the offeror has extensive government contracting experience. If this information has been previously provided to the ARL/ARO, the information need not be provided again. A statement setting forth this condition should be made.

4. The names of other federal, state, local agencies, or other parties receiving the proposal and/or funding the proposed effort. If none, so state. Concurrent or later submission of the proposal to other organizations will not prejudice its review by the ARL/ARO if we are kept informed of the situation.

5. A statement regarding possible impact, if any, of the proposed effort on the environment considering as a minimum its effect upon water, atmosphere, natural resources, human resources, and any other values.

6. The offeror shall provide a statement regarding the use of Class I and Class II ozone-depleting substances. Ozone-depleting substances mean any substance designated as Class I by EPA, including but not limited chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform and any substance designated as Class II by EPA, including but not limited to hydrochlorofluorocarbons. See 40 C.F.R. Part 82 for detailed information. If Class I or II substances are to be utilized, a list shall be provided as part of the offeror's proposal. If none, so state.

7. The type of additional support, if any, requested (e.g., facilities, equipment, and materials). Government Furnished Information or Equipment (GFI/GFE) available to all proposers is described in A.2.4.

<u>BIOGRAPHICAL SKETCHES:</u>

1. This Section shall contain the biographical sketches for senior and key personnel only.

a. Primary Principal Investigator: The "Primary" PI provides a single or initial point of communication between the sponsoring agency(s) and the awardee organization(s) about scientific matters. If not otherwise designated, the first PI listed will serve as the "Primary" PI. This individual can be changed with approval of the agency. The sponsoring agency(s) does not infer any additional scientific stature to this role among collaborating investigators.

b. Co-Principal Investigators: The individual(s) a research organization designates as having an appropriate level of authority and responsibility for the proper conduct of the research and submission of required reports to the agency. When an organization designates more than one PI, it identifies them as individuals who share the authority and responsibility for

leading and directing the research, intellectually and logistically. The sponsoring agency(s) does not infer any distinction among multiple PIs.

c. Key personnel: The individual(s) a research organization designates as having a high level of technical expertise in the topics proposed to be researched and who will both play an active role in the research and supervise the work of more junior personnel on a daily basis.

2. The following information is required:

a. Relevant experience and employment history including a description of any prior Federal employment within one year preceding the date of proposal submission.

b. List of up to five (5) publications most closely related to the proposed project and up to five (5) other significant publications, including those being printed. Patents, copyrights, or software systems developed may be substituted for publications.

c. List of persons, other than those cited in the publications list, who have collaborated on a project or a book, article, report or paper within the last four (4) years. Include pending publications and submissions. Otherwise, state "None."

d. Names of each investigator's own graduate or post graduate advisors and advisees. The information provided in "c" and "d" is used to help identify potential conflicts or bias in the selection of reviewers.

e. The time commitment of each senior or key person to this project.

3. For the personnel categories of postdoctoral associates, other professionals, and students (research assistants), the proposal may include information on exceptional qualifications of these individuals that merit consideration in the evaluation of the proposal.

4. The biographical sketches are limited to three (3) pages per investigator and other individuals that merit consideration.

BIBLIOGRAPHY: A bibliography of pertinent literature is required. Citations must be complete (including full name of author(s), title, and location in the literature).

CURRENT AND PENDING SUPPORT:

1. All project support from whatever source must be listed. The list must include all projects requiring a portion of the principal investigator's and other senior personnel's time, even if they receive no salary support from the project(s) including Cooperative Research and Development Agreements (CRADAs) or other technology transfer agreements with federal labs. Funding provided under any award resulting from this BAA may only be used in support of the effort funded by that award, and not for any other project or purpose.

2. The information should include, as a minimum:

(a) the project/proposal title and brief description,
(b) the name and location of the organization or agency presently funding the work or requested to fund such work,
(c) the award amount or annual dollar volume of the effort,
(d) the period of performance, and
(e) a breakdown of the time required of the principal investigator and/or other senior personnel.

FACILITIES, EQUIPMENT, AND OTHER RESOURCES: The offeror should include in the proposal a listing of facilities, equipment, and other resources already available to perform the research proposed.

BUDGET PROPOSAL (including DD Form 1861):

1. Each proposal must contain a budget for each year of support requested and a cumulative budget for the full term of requested support. The budget form (Form 99) may be reproduced as needed. Locally produced versions may be used, but you may not make substitutions in prescribed budget categories nor alter or rearrange the cost categories as they appear on the form. The proposal may request funds under any of the categories listed so long as the item is considered necessary to perform the proposed work and is not precluded by applicable cost principles. Additionally, a budget by major proposed research tasks using the same budget categories must be included.

2. A signed summary budget page must be included. The documentation pages should be titled "Budget Explanation Page" and numbered chronologically starting with the budget form. The need for each item should be explained clearly.

3. All cost data must be current and complete. Costs proposed must conform to the following principles and procedures:

Educational Institutions: 2 CFR Part 200
Nonprofit Organizations*: 2 CFR Part 200
Commercial Organizations: FAR Part 31, DFARS Part 231, FAR Subsection 15.403-5, and DFARS Subsection 215.403-5.

*For those nonprofit organizations specifically exempt from the provisions of Subpart E of 2 CFR Part 200 (see 2 CFR 200.401(c)),, FAR Part 31 and DFARS Part 231 shall apply.

4. Sample itemized budgets and the information they must include for a contract and for grants and cooperative agreements can be found at Section II. H. (Other Information). Before award it must be established that an approved accounting system and financial management system exist.

APPENDICES: Some situations require that special information and supporting documents be included in the proposal before funding can be approved. Such information and documentation should be included by appendix to the proposal.

(1) To evaluate compliance with Title IX of the Education Amendments of 1972 (20

U.S.C. A Section 1681 Et. Seq.), the Department of Defense is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in STEM disciplines. To enable this assessment, each application must include the following forms completed as indicated.

(A) Research and Related Senior/Key Person Profile (Expanded) form:
The Degree Type and Degree Year fields on the Research and Related Senior/Key Person Profile (Expanded) form will be used by DoD as the source for career information. In addition to the required fields on the form, applicants must complete these two fields for all individuals that are identified as having the project role of PD/PI or Co-PD/PI on the form. Additional senior/key persons can be added by selecting the "Next Person" button.

(B) Research and Related Personal Data form:

This form will be used by DoD as the source of demographic information, such as gender, race, ethnicity, and disability information for the Project Director/Principal Investigator and all other persons identified as Co-Project Director(s)/Co-Principal Investigator(s). Each application must include this form with the name fields of the Project Director/Principal Investigator or any Co-Project Director(s)/Co-Principal Investigator(s) completed; however, provision of the demographic information in the form is voluntary. If completing the form for multiple individuals, each Co-Project Director/Co-Principal Investigator can be added by selecting the "Next Person" button. The demographic information, if provided, will be used for statistical purposed only and will not be made available to merit reviewers. Applicants who do not wish to provide some or all of the information should check or select the "Do not wish to provide" option.

(2) Data Management Plan: A data management plan is a document that describes which data generated through the course of the proposed research will be shared and preserved, how it will be done, or explains why data sharing or preservation is not possible or scientifically appropriate, or why the costs of sharing or preservation are incommensurate with the value of doing so. See also: DoD Instruction 3200.12. In no more than 2 pages set forth as a separate PDF document, discuss the following:

- The types of data, software, and other materials to be produced.
- How the data will be acquired.
- Time and location of data acquisition, if scientifically pertinent.
- How the data will be processed.
- The file formats and the naming conventions that will be used.
- A description of the quality assurance and quality control measures during collection, analysis, and processing.
- A description of dataset origin when existing data resources are used.
- A description of the standards to be used for data and metadata format and content.
- Appropriate timeframe for preservation.
- The plan may consider the balance between the relative value of data preservation and other factors such as the associated cost and administrative burden. The plan will provide a justification for such decisions.
- A statement that the data cannot be made available to the public when there are

national security or controlled unclassified information concerns (e.g., “This data cannot be cleared for public release in accordance with the requirements in DoD Directive 5230.09.”)

(3) With the application, the Applicant must provide the following “Privacy Act Statement” consent form for each Covered Individual in the proposal. This form must also be signed by the Applicant as that Individual’s Sponsor.

Privacy Act Statement

Army Futures Command or Department of the Army

Application for Federal Assistance

Authority: Government Paperwork Elimination Act (Pub. L. 105-277, 44 U.S.C. 3504); Executive Order 12372, Intergovernmental review of Federal Programs (47 FR 30959); 42 U.S. Code § 6605 – Disclosure of funding sources in applications for Federal research and development awards; Public Law 117-167, CHIPS and Science Act; Public Law 116-92, National Defense Authorization Act for Fiscal Year 2020; 5 U.S.C. 9101, Access to Criminal History for National Security and Other Purposes 5 CFR §1320.8, Agency collection of information Responsibility; 18 U.S.C. § 1001, False Statements, Concealment; E.O. 13478, Amendments to Executive Order 9397 Related to Federal Use of social Security Numbers; NSPM-33, National Security Presidential Memorandum 33 on National Security for United States Research and Development; DoD-D 5240.01, DoD Intelligence Activities; DoD-I 5200.02, Department of Defense Personnel Security Program; Army Regulation 381-10, U.S. Army Intelligence Activities

Purpose: The information collected may be used in processing, investigating, and maintaining records relevant to Federal Assistance awarded by the Department of the Army. Records in these systems will be used to ensure Army sponsored and/or awarded federal grants, assistance, contracts, and/or benefits are awarded to responsible parties, entities, and individuals.

Routine Uses: To contractors, grantees, experts, consultants, students, and others performing or working on a contract, service, grant, cooperative agreement, or other assignment for the Federal Government when necessary to accomplish an agency function.

To the appropriate Federal, State, local, territorial, tribal, foreign, or international law enforcement authority or other appropriate entity where a record, either alone or in conjunction with other information, indicates a violation or potential violation of law, whether criminal, civil, or regulatory in nature.

DoD Blanket Routine Use (http://dpcld.defense.gov/privacy)

Effect of not providing information: Providing information to the Department of the Army is voluntary. However, 42 U.S. Code § 6605, which imposes certain disclosure requirements in connection with Federal research and development awards, provides various enforcement mechanisms for non-compliance. One such mechanism, which the Department of the Army intends to pursue here, is rejection of such applications.

Proposal Title (or grants.gov number): _____

Acknowledgment of consent:

Covered individual (Signature): _____ Date: _____

Covered individual (Name print): _____

Sponsor signature (Signature): _____ Date: _____

Sponsor signature (Name print): _____

Institution Name: _____

e. Submission of Complete Research Proposals

Proposals must be submitted through the offeror's organizational office having responsibility for Government business relations. All signatures must be that of an official authorized to commit the organization in business and financial affairs. Proposals must be submitted electronically using one of the two following formats, based on award type sought. The content will remain the same whether using email or Grants.gov.

EMAIL SUBMISSION (for **Contracts only**):

1. Proposal requesting award of a contract must be emailed directly to usarmy.rtp.devcom-arl.mesg.qcbox@army.mil
Do not email full proposals to the Program Point of Contact. All e-mailed proposals must contain the information outlined in Section II, D, 2, entitled "*Table of Contents*" including the electronic forms as follows:

(a) ARO Form 51, Proposal Cover Page;
(b) ARO Form 99, Summary Proposal Budget or equivalent,
(c) ARO Current and Pending Support (unnumbered form),
(d) ARO Form 52 or ARO Form 52a.
(e) "FAR 52.209-11 – Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law (Feb 2016). See Note below."

These forms may be accessed at https://arl.devcom.army.mil/resources/baa-forms/ under BAA Forms. The fillable PDF forms may be saved to a working directory on a computer and opened and filled in using the latest compatible Adobe Reader software application found at this Grants.Gov: https://www.grants.gov/applicants/adobe-software-compatibility

Note: A completed 52.209-11 – Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law (Feb 2016), is not required if the offeror's SAM Certifications and Representations have been updated annually since 2016. If the offeror's SAM has not be updated since March 2016, the completed representation must be submitted and include POC information and signature of the authorized representative.

2. All forms requiring signature must be completed, printed, signed, and scanned into a PDF document. All documents must be combined into a single PDF formatted file to be attached to the e-mail.

3. Proposal documents (excluding required forms) must use the following format:
- Page Size – 8 ½ x 11 inches
- Margins – 1 inch
- Spacing – single
- Font – Times New Roman, 12 point, single-sided pages

GRANTS.GOV SUBMISSION (For **all Assistance Instruments**):

1) Proposals requesting Assistance agreements must be submitted via Grants.gov; proposals

requesting a Contract or OT may be submitted either via Grants.gov or email (instructions above).

(2) Grants.gov Registration must be accomplished prior to application submission in Grants.gov.

Each organization that desires to submit applications via Grants.Gov must complete a one-time registration. There are several one-time actions your organization must complete in order to submit applications through Grants.gov (e.g., obtain a Unique Entity Identifier, register with the SAM, register with the credential provider, register with Grants.gov and obtain approval for an authorized organization representative (AOR) to submit applications on behalf of the organization). To register please see https://www.grants.gov/register

Please note the registration process for an Organization or an Individual can take between three to five business days or as long as four weeks if all steps are not completed in a timely manner.

Questions relating to the registration process, system requirements, how an application form works, or the submittal process should be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

NOTE: All web links referenced in this section are subject to change by Grants.gov and may not be updated here.

(3) Specific forms are required for submission of a proposal. The forms are contained in the Application Package available at http://www.grants.gov under the specific opportunity you are submitting under. When viewing an opportunity, select the "Package" tab and then select "View." A Grant Application Package and Application Instructions are available for this BAA through the Grants.gov Apply portal under CFDA Number 12.431/Funding Opportunity Number W911NF24S0004. To apply, select "Apply" and then "Apply Now Using Workspace."

*NOTE: Effective 31 December 2017, applicants must apply online at Grants.gov using the application Workspace. For access to complete instructions on how to apply for opportunities using Workspace refer to https://www.grants.gov/applicants/grant-applications/how-to-apply-for-grants

The following documents are mandatory: (1) Application for Federal Assistance (R&R) (SF 424 (R&R)), and (4) Attachments form.

(4) The SF 424 (R&R) form is to be used as the cover page for all proposals submitted via Grants.gov. The SF 424 (R&R) must be fully completed. AOR usernames and passwords serve as "electronic signatures" when your organization submits applications through Grants.gov. By using the SF 424 (R&R), proposers are providing the certification required by 32 CFR Part 28 regarding lobbying (see Section II.F.2.a.ii of this BAA). Block 11, "Descriptive Title of Applicant's Project," must reference the research topic area being addressed in the effort by identifying the specific paragraph from Section II.A of this BAA.

(5) The Attachments form must contain the documents outlined in Section II.D.2.e.ii entitled

"Table of Contents". All documents must be combined into separate and single PDF formatted files using the Table of Contents names. Include "W911NF24S0004" in the title so the proposal will be distinguished from other BAA submissions and upload each document to the mandatory Attachments form.

(6) The applicant must include with its proposal submission the representations required by Section II.F.2.a.ii of this BAA. The representations must include applicant POC information and be signed by an authorized representative. Attach the representations document to an available field within the Attachments form. Note: If the applicant's online SAM Representations and Certifications include its response to the representations, a hard copy representation is not required with proposal submission.

(7) The Grants.gov User Guide at: https://www.grants.gov/help/html/help/index.htm#t=GetStarted%2FGetStarted.htm will assist AORs in the application process. Remember that you must open and complete the Application for Federal Assistance (R&R) (SF 424 (R&R)) first, as this form will automatically populate data fields in other forms. If you encounter any problems, contact customer support at 1-800-518- 4726 or at support@grants.gov. If you forget your user name or password, follow the instructions provided in the Credential Provider tutorial. Tutorials may be printed by right-clicking on the tutorial and selecting "Print".

(8) As it is possible for Grants.gov to reject the proposal during this process, it is strongly recommended that proposals be uploaded at least two days before any established deadline in the BAA so that they will not be received late and be ineligible for award consideration. It is also recommended to start uploading proposals at least two days before the deadline to plan ahead for any potential technical and/or input problems involving the applicant's own equipment.

3. Unique Entity Identifier and System for Award Management (SAM)

a. Each applicant (unless the applicant is an individual or Federal awarding agency that is exempt from those requirements under 2 CFR §25.110(b) or (c), or has an exception approved by the Federal awarding agency under 2 CFR §25.110(d)) is required to:

(i) Provide a valid unique entity identifier (formerly DUNS) in its application. More information on the DUNS to Unique Entity ID (SAM) Transition can be found at https://sam.gov/content/duns-uei
(ii) Be registered in SAM before submitting its application; and
(iii) Maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency.

b. The SAM obtains Legal Business Name, Doing Business Name (DBA), Physical Address, and Postal Code/ Zip+4 data fields from D&B. If corrections are required, registrants will not be able to enter/modify these fields in SAM; they will be pre-populated using D&B Unique Entity Identifier record data. When D&B confirms the correction has been made, the registrant must then re-visit sam.gov and click a "yes"" to D&B's changes. Only at this point will the D&B data be accepted into

the SAM record. Allow a minimum of two (2) business days for D&B to send the modified data to SAM.

c. The Federal awarding agency may not make a Federal award to an applicant until the applicant has complied with all applicable unique entity identifier and SAM requirements. If an applicant has not fully complied with the requirements by the time the Federal awarding agency is ready to make a Federal award, the Federal awarding agency may determine that the applicant is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another applicant.

4. Submission Dates and Times:

White Papers:
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 **by 4:00 PM Eastern Time on 23 January 2024**

The email subject line should contain the following: **W911NF24S0004 TINA QC White Paper**. White Papers received after the deadline will not be reviewed. Feedback on the White Papers will be emailed directly to the proposed principal investigators by 26 February 2024.

Proposals:
Proposals transmitted to be considered for award must be received by Grants.gov **no later than 4:00 PM Eastern Time on 9 April 2024.**

Applicants are responsible for submitting electronic proposals in sufficient time to insure Grants.gov receives it by the time specified in this BAA. If the electronic proposal is received by Grants.gov after the exact time and date specified for receipt of offers, it will be considered "late" and will not be considered for award. Acceptable evidence to establish the time of receipt by Grants.gov includes documentary evidence of receipt maintained by Grants.gov.

Because of potential problems involving the applicants' own equipment, to avoid the possibility of late receipt and resulting in ineligibility for award consideration, it is strongly recommended that proposals be uploaded at least two business days before the deadline established in the BAA.

If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at grants.gov by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation closing date, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

Proposal Receipt Notices – After a proposal is submitted to Grants.gov, the AOR will receive a series of three emails from Grants.gov. The first two emails will be received within 24 to 48 hours after submission. The first email will confirm time of receipt of the application by the Grants.gov system and the second will indicate that the application has either been successfully validated by the

system prior to transmission to the grantor agency or has been rejected due to errors. A third email will be received once the agency has confirmed receipt of the proposal. The document, Tracking Your Application Package, located at https://www.grants.gov/web/grants/applicants/track-my-application.html?inheritRedirect=true explains this process. The proposal is not considered received until the AOR receives email #3.

5. Intergovernmental Review

Not Applicable

6. Funding Guidance:

Multiple awards are anticipated. Per-project funding guidance is provided in the table below. Year 1 & 2 guidance is larger than Years 3-4 to provide the opportunity to set up experimental infrastructure for the proposed research early in the project, primarily in Year 1. Projects requesting the maximums, or larger, shown below must provide strong and justification based on the scope and complexity of the proposed research.

Proposal Topic	Year 1	Year 2	Year 3	Year 4
All topics	$1,750000	$1,500,000	$1,250,000	$1,250,000

The actual amount of each award will be contingent on availability of funds and the scope of the proposed work. Depending on the results of the proposal evaluation, there is no guarantee that any of the proposals submitted in response to this BAA will be recommended for funding. Proposals may be funded in part.

7. Other Submission Requirements:

Information to Be Requested from Successful Offerors- Offerors whose proposals are accepted for funding will be contacted before award to provide additional information required for award. The required information is normally limited to clarifying budget explanations, representations, certifications, and some technical aspects.

For Contracts Only- Performance Work Statements (PWS) - prior to award the Contracting Officer may request that the contractor submit a PWS for the effort to be performed, which will be incorporated into the contract at the time of award.

An applicant may withdraw a proposal at any time before award by written notice or by email. Notice of withdrawal shall be sent to the Contracting/Grants Officer identified in Section G, of this BAA. Withdrawals are effective upon receipt of notice by the Contracting/Grants Officer.

E. Application Review Information:

1. Criteria:

a. Proposals submitted in response to this BAA will be evaluated and a recommendation for selection be made on the following criteria:

(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 DoD 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 TINA QC Program goals. The proposal describes how the proposed solution contributes to DoD's mission to invest in high-risk/high-payoff research that can provide the U.S. with an overwhelming advantage over its future adversaries. The proposed approach to intellectual property rights is in the Government's best interest.

(iii) Experience and qualifications of the principal investigator, other key research personnel, and the institution sponsoring 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.

NOTE: Cost sharing will not be considered in the evaluation.

2. Review and Selection Process:

a. The proposal selection process will be conducted based upon a technical review by a panel of government scientists according to the evaluation criteria specified in Section E.1 (*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.

b. Upon completion of an evaluation against the criteria in Section II.E.1, a proposal selected 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. For clarification, this solicitation will be conducted as an 'other competitive procedure,' in accordance with FAR 6.102 and FAR 35.016, and will not be conducted as a negotiated procurement under FAR Part 15. The Government will not conduct a comparative analysis or trade-off analysis among proposals, and discussions under FAR Part 15 will not be conducted.

d. 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.

e. Army Research Risk Assessment. Each proposal with a recommendation to "select" in accordance with II.E.2.a above, whose costs have been determined to be reasonable and realistic in accordance with II.E.2.b above, for which funds are available, and where a grant or cooperative agreement will be the award instrument type, may be subject to an Army Research Risk Assessment prior to award

i. The Army Research Risk Assessment Program. The Army Research Risk Assessment Program (ARRP) is an adaptive risk management security program applied to Army-funded research designed to help protect Army Science and Technology (S&T) by identifying possible vectors of undue foreign influence.

In order to identify and mitigate undue foreign influence as required by federal law and policy, the Army may perform a research risk assessment of each proposal selected based on the criteria above for consideration of a fundamental research grant or cooperative agreement award. ARRP risk assessments for these subject proposals will be developed for all proposed Senior/Key personnel, (also referred to as "Covered Individuals"). These risk assessments will be based on information disclosed in the Standard Form (SF) 424, "Senior/Key Person Profile (Expanded)," any of its accompanying or referenced documents, publicly available information, and information contained in internal Army databases. Nationality or citizenship is not a factor in the risk assessment.
ARRP has a risk matrix which identifies risk factors and resulting risk ratings. The matrix generally looks at four factors, or risk areas: participation in foreign talent programs; denied entity list affiliation or association (see https://www.bis.doc.gov/index.php/the-denied-persons-list and https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern/entity-list); funding sources to include conflict of interest or conflict of commitment, or funding from a strategic competitor; and foreign influence showing a pattern or history of affiliation, association, or collaboration with a foreign institution, person or entity

from a U.S. strategic competitor. The matrix is set forth below:

Rating	Identified Specific Actions of the Senior/Key Personnel			
	Foreign Talent Program	**Denied Entities**	**Funding**	**Foreign Institutions**
HIGH	Indicators of active (ongoing) participation or sponsorship in a strategic competitor Foreign Talent Program	Indicators of an active (ongoing) affiliation or past affiliation or present association with an entity on the U.S. Gov't denied entity or person list or EO 13959 or subsequent similar issuances	Indicators of active (ongoing) conflict of interest, conflict of commitment, or pattern of direct funding from a strategic competitor or country with history of targeting U.S. research or technology	Indicators of active (ongoing) direct affiliation, association or collaboration with a foreign institution, person, or entity from a strategic competitor
MODERATE	Indicators of past participation in a Foreign Talent Program with a U.S. strategic competitor, or country with a history of targeting U.S. research or technology	Indicators of past association with an entity identified in the U.S. Gov't denied entity or person list or EO 13959 or subsequent similar issuances	Indicators of any history or nonconsecutive pattern of, conflict of interest, conflict of commitment, or funding from a strategic competitor or country with history of targeting U.S. research or technology	Indicators of a history or pattern of association or collaboration with foreign institution, person, or entity from a strategic competitor or country with history of targeting U.S. research or technology
LOW	No participation in a Foreign Talent Program	No indicators of past or current association or affiliation with an entity on the U.S. Gov't denied entity or person list or EO 13959 or subsequent similar issuances	No indicators of past funding from a strategic competitor or country with history of targeting U.S. research or technology	No indicators of an association or collaboration with a foreign institution, person, or entity from a strategic competitor or country with history of targeting U.S. research or technology

- **Affiliation** is academic, professional, or institutional appointments or positions with a foreign government-connected entity, whether full-time, part-time, or voluntary (including adjunct, visiting, honorary, or lectures/visits) where direct monetary or non-monetary reward is involved.

- **Association** is academic, professional, or institutional appointments or positions with a foreign government-connected entity, whether full-time, part-time, or voluntary (including adjunct, visiting, honorary, or lectures/visits) where no direct monetary or non-monetary reward is involved.

- **Collaboration** is academic, professional, or institutional agreement to jointly work together with a foreign government- connected entity, whether full-time, part-time, or voluntarily, in an official or unofficial capacity. Co-authorship in research endeavors is an example of collaboration.

- **Strategic competitors** are those adversaries identified in the current year Annual Threat Assessment report from Director of National Intelligence. The 2021 assessment was published on April 9, 2021 and can be found at https://www.dno.gov/.

- **Conflict of Interest and Conflict of Commitment** are defined in NSPM-33 and in the CONOP as well as the ARRP Policy memorandum.

- **Senior/Key Personnel** are those who (a) contribute in a substantive, meaningful way to the scientific development or execution of a research and development project proposed to be carried out with a research and development award from a Federal research agency; and (b) are designated as a covered individual by the Federal research agency concerned.

ARRP risk ratings range from LOW to HIGH depending on the amount, type, and timing of foreign associations or affiliations that could constitute a foreign-influenced "Conflict of Interest" or "Conflict of Commitment," as defined by National Security Presidential Memorandum 33 (NSPM-33).

Once the research risk assessments are performed, the Army risk acceptance authority has several courses of action available for consideration. These courses of action are as follows:

Course of Action 1 - The Army risk acceptance authority may accept the risk rating that results from the risk assessment process and proceed with the award. This typically happens with proposals with risk ratings of "LOW" but could also happen with the other risk ratings. In Course of Action 1, the applicant will not be required to do anything related to the risk assessment process or the assigned risk rating.

Course of Action 2 - The Army risk acceptance authority may accept the risk rating with some research protection requirements added to the grant or cooperative agreement award. This typically happens with proposals with risk ratings of "MODERATE" but could also happen with the other risk ratings. Also, typically, these added research protection requirements could include, but be limited to the following in the grant or cooperative agreement award:

- The University's Security Office shall provide the Principal Investigator and key personnel related to this award training on foreign talent recruitment programs and threat awareness and reporting requirements.

- The University shall disclose to the Army Research Laboratory Security Office

and Grants Officer all international travel, i.e., all international travel completed as part of any university business, by the Principal Investigator and key personnel related to this award instrument prior to travel.

- The University shall report to the Army Research Laboratory Security Office and Grants Officer all inquiries by foreign operatives or suspected foreign operatives into research associated with the award.

- The University is encouraged to utilize students without potential conflicts of interest or conflicts of commitment as identified in U.S. National Security Presidential Memorandum (NSPM-33).

Under Course of Action 2, the applicant will be asked to sign the grant or cooperative agreement prior to award, confirming agreement to these added requirements. Should the applicant not agree to these added research protection requirements, the Army risk assessment authority may decide not to award.

Course of Action 3 - The Army risk acceptance authority is not willing to accept the risk assigned as a result of the assessment process. In this case, the applicant will be provided an opportunity to provide a risk mitigation plan. This typically happens with proposals with risk ratings of "HIGH" but could also happen with the other risk ratings. In Course of Action 3, the applicant will be informed of the risk rating assigned during the risk assessment process as well as the block(s) on the matrix where the review resulted in some type of finding that contributed to the assigned risk rating. Should the applicant choose to not submit a risk mitigation plan, the Army risk assessment authority may decide not to award. Should the applicant choose to submit a risk mitigation plan, the Army will review such plan. As a result of this review, the Army risk acceptance authority may then be willing to accept the risk assigned with the mitigation plan and proceed with the award or the Army risk acceptance authority may not be willing to accept the risk and may decide not to award. Further, should the risk mitigation plan include proposal revisions that affect those aspects of the proposal included in the review or selection process under SECTION II.E.2.c, the original proposal evaluation will be reviewed and revised as appropriate based on the proposal revisions.

ii. Actions Required by Applicants.

(1) By submission of this application and authorized signature on the SF 424 (R&R) Form, the Applicant agrees to comply with the following requirements:

- To certify that each covered individual who is listed on the application has been made aware: (1) of all relevant disclosure requirements, including the requirements of 42 U.S.C. § 6605; and (2) that false representations may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802. See National Science and Technology Council Guidance for Implementing National Security Presidential Memorandum 33 (NSPM-33) on National Security Strategy for United

States Government-Supported Research and Development (January 2022), at p. 7 (available at https://www.whitehouse.gov/wp-content/uploads/2022/01/010422-NSPM-33-Implementation-Guidance.pdf).

- To establish and maintain an internal process or procedure to address foreign talent programs, conflicts of commitment, conflicts of interest, and research integrity.

- To exercise due diligence to identify Foreign Components or participation by Senior/Key Personnel in Foreign Government Talent Recruitment Programs and agree to share such information with the Government upon request.

(2) With the application, the Applicant must provide a completed "Privacy Act Statement" consent form for each Covered Individual that is also signed by the Applicant as that Individual's Sponsor. The "Privacy Act Statement" form is included at SECTION II.D.2.c of this BAA.

(3) During the award period of performance:

- If, at any time, during performance of this award, the Recipient learns that its Senior/Key Research Personnel (including any subawardee personnel who receive this designation) are or are believed to be participants in a Foreign Government Talent Program or have Foreign Components with a strategic competitor or country with a history of targeting U.S. technology for unauthorized transfer, the recipient will notify the Government or Grants Officer within 5 business days of awareness.

- This disclosure must include specific information as to the personnel involved and the nature of the situation and relationship. The Government will review this information and conduct any necessary fact-finding or discussion with the Recipient. The Government's determination on disclosure may include acceptance, mitigation, or termination of the award.

- Failure of the Recipient to reasonably exercise due diligence to discover or ensure that neither it nor any of its Senior/Key Research Personnel involved in the subject award are participating in a Foreign Government Talent Program or have a Foreign Component with a strategic competitor or country with a history of targeting U.S. technology for unauthorized transfer may result in the Government exercising remedies in accordance with federal law and regulation.

- The provisions concerning this disclosure will be included in each award.

- The Recipient will be required to flow down this provision to all sub awardees who have personnel designated as Senior/Key Research Personnel as a result of their involvement in the performance of the research.

iii. Actions Required by Covered Individuals.

Federal law requires that all current and pending research support, as defined by 42 U.S.C. §6605, must be disclosed at the time of proposal submission, for all covered individuals. The Government may require an updated disclosure during the performance of any research project selected for funding. The Government will require an updated disclosure whenever covered individuals are added or identified as performing under the funded project. See definition of "Covered Individuals" below.

Covered Individuals are also required to sign the "Privacy Act Statement" and provide such signed statement to the applicant for submission with the proposal.

Any decision to accept a proposal for funding under this announcement will include full reliance on the individual's statements. Failure to report fully and completely all sources of project support and outside positions and affiliations may be considered a material statement within the meaning of the False Claims Act, 31 U.S.C. 3729, and constitute a violation of Federal law.

iv. Privacy Act Compliance. All information collected and developed for the purpose of conducting ARRP risk assessments will be maintained in accordance with the following authorities:

- Office of Personnel Management (OPM) System of Records Notice (SORN) GOVT-1. This SORN governs information collected from federal grantees for the purpose of conducting a national security investigation or carrying out other lawful statutory, administrative, or investigative purposes of the agency, to the extent the information is relevant and necessary to the requesting agency's decision.

- Department of the Army (DA) SORN A0381-20b-DAMI (Feb. 10, 2009, 74 F.R. 6596). This SORN applies to information contained in systems used by the Department of the Army to develop ARRP risk assessments.

- 32 C.F.R. Appendix A to Part 310, Paragraph N: DoD Blanket Routine Uses. Pursuant to this provision, a record from a system of records maintained by a Component may be disclosed as a routine use outside the DoD or the U.S. Government for the purpose of counterintelligence activities authorized by U.S. law or Executive order or for the purpose of enforcing laws that protect the national security of the United States.

v. Definitions

- Covered Individual. An individual who contributes in a substantive, meaningful way to the scientific development or execution of a research and development project

proposed to be carried out with a research and development award from a Federal research agency; and is designated as a covered individual by the Federal research agency concerned. See 42 U.S.C. § 6605, Definitions. (For purposes of this BAA, "covered individuals" are all Senior/Key Personnel.)

- Senior/Key Research Personnel. This term includes the Principal Investigator (PI) and other individuals who contribute to the scientific development or execution of a project in a substantive, measurable way, whether or not they receive salaries or compensation under the award. These include individuals whose absence from the project would be expected to impact the approved scope of the project. (For purposes of this BAA, "Senior/Key Personnel" are all considered "covered individuals."

- Foreign Associations and Affiliations. Association is defined as collaboration, coordination or interrelation, professionally or personally, with a foreign government-connected entity where no direct monetary or non-monetary reward is involved. Affiliation is defined as collaboration, coordination, or interrelation, professionally or personally, with a foreign government-connected entity where direct monetary or non-monetary reward is involved.

- Foreign Government Talent Recruitment Programs. In general, these programs include any foreign-state-sponsored attempt to acquire U.S. scientific-funded research or technology through foreign government-run or funded recruitment programs that target scientists, engineers, academics, researchers, and entrepreneurs of all nationalities working and educated in the U.S. Distinguishing features of a Foreign Government Talent Recruitment Program may include:

    - Compensation, either monetary or in-kind, provided by the foreign state to the targeted individual in exchange for the individual transferring their knowledge and expertise to the foreign country. In-kind compensation may include honorific titles, career advancement opportunities, promised future compensation or other types of remuneration or compensation.

    - Recruitment, in this context, refers to the foreign-state-sponsor's active engagement in attracting the targeted individual to join the foreign-sponsored program and transfer their knowledge and expertise to the foreign state. The targeted individual may be employed and located in the U.S. or in the foreign state.

    - Contracts for participation in some programs that create conflicts of commitment and/or conflicts of interest for researchers. These contracts include, but are not limited to, requirements to attribute awards, patents, and projects to the foreign institution, even if conducted under U.S. funding, to recruit or train other talent recruitment plan members, circumventing merit-based processes, and to replicate or transfer U.S.-funded work in another country.

    - Many, but not all, of these programs aim to incentivize the targeted individual to physically relocate to the foreign state. Of particular concern are those programs

that allow for continued employment at U.S. research facilities or receipt of U.S. Government research funding while concurrently receiving compensation from the foreign state.

- Foreign Government Talent Recruitment Programs do **not** include research agreements between the University and a foreign entity, unless that agreement includes provisions that create situations of concern addressed elsewhere in this section; agreements for the provision of goods or services by commercial vendors; or invitations to attend or present at conferences.

- Conflict of Interest. A situation in which an individual, or the individual's spouse or dependent children, has a financial interest or financial relationship that could directly and significantly affect the design, conduct, reporting, or funding of research.

- Conflict of Commitment. A situation in which an individual accepts or incurs conflicting obligations between or among multiple employers or other entities. Common conflicts of commitment involve conflicting commitments of time and effort, including obligations to dedicate time in excess of institutional or funding agency policies or commitments. Other types of conflicting obligations, including obligations to improperly share information with, or withhold information from, an employer or funding agency, can also threaten research security and integrity and are an element of a broader concept of conflicts of commitment.

- Foreign Component. Performance of any significant scientific element or segment of a program or project outside of the U.S., either by the University or by a researcher employed by a foreign organization, whether or not U.S. government funds are expended. Activities that would meet this definition include, but are not limited to: involvement of human subjects or animals; extensive foreign travel by University research program or project staff for the purpose of data collection, surveying, sampling, and similar activities; collaborations with investigators at a foreign site anticipated to result in co-authorship; use of facilities or instrumentation at a foreign site; receipt of financial support or resources from a foreign entity; or any activity of the University that may have an impact on U.S. foreign policy through involvement in the affairs or environment of a foreign country.

- Strategic Competitor. A nation, or nation-state, that engages in diplomatic, economic or technological rivalry with the United States where the fundamental strategic interests of the U.S are under threat.

3. Recipient Qualification

a. For Grant, Cooperative Agreement:

The Grants Officer is responsible for determining a recipient's qualification prior to award. In general, a Grants Officer will award grants or cooperative agreements only to qualified recipients that meet the standards at 32 CFR 22.415. To be qualified, a potential recipient must:

-Have the management capability and adequate financial and technical resources, given those that would be made available through the grant or cooperative agreement, to execute the program of activities envisioned under the grant or cooperative agreement;

-Have a satisfactory record of executing such programs or activities (if a prior recipient of an award);

-Have a satisfactory record of integrity and business ethics; and

-Be otherwise qualified and eligible to receive a grant or cooperative agreement under applicable laws and regulations. In accordance with OMB guidance in parts 180 and 200 of Title 2, CFR, it is DoD policy that DoD Components must report and use integrity and performance information in the Federal Awardee Performance and Integrity Information System (FAPIIS), or any successor system designated by OMB, concerning grants, cooperative agreements, and OTs as follows:

(i) If the total Federal share will be greater than the simplified acquisition threshold on any Federal award under a notice of funding opportunity (see §200.88 Simplified Acquisition Threshold):

(a) The Federal awarding agency, prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold, will review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS) (see 41 U.S.C. 2313);

(b) An applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a Federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM;

(c) The Federal awarding agency will consider any comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants as described in §200.205 Federal awarding agency review of risk posed by applicants.

b. For CONTRACT Proposals:

i. Contracts shall be awarded to responsible prospective contractors only. See FAR 9.104-1 for a listing of the general standards against which an applicant will be assessed to determine responsibility.

Applicants are requested to provide information with proposal submission to assist the Contracting Officer's evaluation of responsibility.

ii. FAPIIS will be checked prior to making an award. The web address is: SAM.gov The applicant representing the entity may comment in this system on any information about the entity that a federal government official entered. The information in FAPIIS will be used in making a judgment about the entity's integrity, business ethics, and record of performance under Federal awards that may affect the official's determination that the applicant is qualified to receive an award.

F. Award Administration Information:

1. Award Notices:

Initial notification of selection of proposals for funding will be e-mailed by ARL-ARO to successful offerors about 20 May 2024.

Applicants whose proposals are recommended for award may be contacted by a Contract/Grant Specialist to discuss additional information required for award. This may include representations and certifications, revised budgets or budget explanations, certificate of current cost or pricing data, subcontracting plan for small businesses, and/or other information as applicable to the proposed award. The anticipated start date will be determined at that time.

The notification email is not an authorization to commit or expend funds. The Government is not obligated to provide any funding until a Government Contracting/ Grants Officer signs the award document.

The award document signed by the Government Contracting/Grants Officer is the official and authorizing award instrument. The authorizing award instrument, signed by the Contracting/ Grants Officer, will be emailed to the PI and AOR.

2. Administrative and National Policy Requirements:

a. Required Certifications

(i) For CONTRACT Proposals:

Certifications and representations shall be completed by successful offerors prior to award. Federal Acquisition Regulation (FAR) Online Representations and Certifications are to be completed through SAM at website https://www.SAM.gov. DFARS and contract specific certification packages will be provided to the contractor for completion prior to award.

FAR 52.203-18, PROHIBITION ON CONTRACTING WITH ENTITIES THAT REQUIRE CERTAIN CONFIDENTIALITY AGREEMENTS OR STATEMENTS—REPRESENTATION (JAN 2017)

(a) Definition. As used in this provision--

“Internal confidentiality agreement or statement”, “subcontract”, and “subcontractor”, are defined in the clause at 52.203-19, Prohibition on Requiring Certain Internal Confidentiality Agreements or Statements.

(b) In accordance with section 743 of Division E, Title VII, of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L. 113-235) and its successor provisions in subsequent appropriations acts (and as extended in continuing resolutions), Government agencies are not permitted to use funds appropriated (or otherwise made available) for contracts with an entity that requires employees or subcontractors of such entity seeking to report waste, fraud, or abuse to sign internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or subcontractors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law

enforcement representative of a Federal department or agency authorized to receive such information.

(c) The prohibition in paragraph (b) of this provision does not contravene requirements applicable to SF 312, (Classified Information Nondisclosure Agreement), Form 4414 (Sensitive Compartmented Information Nondisclosure Agreement), or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

(d) Representation. By submission of its offer, the applicant represents that it will not require its employees or subcontractors to sign or comply with internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or subcontractors from lawfully reporting waste, fraud, or abuse related to the performance of a Government contract to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information (e.g., agency Office of the Inspector General).

FAR 52.204-26, COVERED TELECOMMUNICATIONS EQUIPMENT OR SERVICES-REPRESENTATION (OCT 2020)

a) Definitions. As used in this provision, "covered telecommunications equipment or services" and "reasonable inquiry" have the meaning provided in the clause 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

(b) Procedures. The Offeror shall review the list of excluded parties in the System for Award Management (SAM) (https://www.sam.gov) for entities excluded from receiving federal awards for "covered telecommunications equipment or services".

(c)(1) Representation. The Offeror represents that it [ ] does, [ ] does not provide covered telecommunications equipment or services as a part of its offered products or services to the Government in the performance of any contract, subcontract, or other contractual instrument.

(2) After conducting a reasonable inquiry for purposes of this representation, the offeror represents that it [ ] does, [ ] does not use covered telecommunications equipment or services,

or any equipment, system, or service that uses covered telecommunications equipment or services.

FAR 52.204-27 PROHIBIITON ON A BYTEDANCE COVERED APPLICATION (JUN 2023)

(a) Definitions. As used in this clause, "Covered application means the social networking service TikTok or any successor application or service developed or provided by ByteDance Limited or an entity owned by ByteDance" Limited. Information technology, as defined in 40 U.S.C. 11101(6)— (1) Means any equipment or interconnected system or subsystem of equipment, used in the automatic acquisition, storage, analysis, evaluation, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency, if the equipment is used by the executive agency directly or is used by a contractor under a contract with the executive agency that requires the use— (i) Of that equipment; or (ii) Of that equipment to a significant extent in the performance of a service or the furnishing of a product; (2) Includes computers, ancillary equipment (including imaging peripherals, input, output, and storage devices necessary for security and surveillance), peripheral equipment designed to be controlled by the central processing unit of a computer, software, firmware and similar procedures, services (including support services), and related resources; but (3) Does not include any equipment acquired by a Federal contractor incidental to a Federal contract.

(b) Prohibition. Section 102 of Division R of the Consolidated Appropriations Act, 2023 (Pub. L. 117-328), the No TikTok on Government Devices Act, and its implementing guidance under Office of Management and Budget (OMB) Memorandum M-23-13, dated February 27, 2023, "No TikTok on Government Devices" Implementation Guidance, collectively prohibit the presence or use of a covered application on executive agency information technology, including certain equipment used by Federal contractors. The Contractor is prohibited from having or using a covered application on any information technology owned or managed by the Government, or on any information technology used or provided by the Contractor under this contract, including equipment provided by the Contractor's employees; however, this prohibition does not apply if the Contracting Officer provides written notification to the Contractor that an exception has been granted in accordance with OMB Memorandum M-23-13.

(c) Subcontracts. The Contractor shall insert the substance of this clause, including this paragraph (c), in all subcontracts, including subcontracts for the acquisition of commercial products or commercial services.

FAR 52.209-11, REPRESENTATION BY CORPORATIONS REGARDING DELINQUENT TAX LIABILITY OR A FELONY CONVICTION UNDER FEDERAL LAW (FEB 2016)

(a) As required by sections 744 and 745 of Division E of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L 113-235), and similar provisions, if contained in subsequent appropriations acts, the Government will not enter into a contract with any corporation that--

(1)Has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority

responsible for collecting the tax liability, where the awarding agency is aware of the unpaid tax liability, unless an agency has considered suspension or debarment of the corporation and made a determination that suspension or debarment is not necessary to protect the interests of the Government; or

(2) Was convicted of a felony criminal violation under any Federal law within the preceding 24 months, where the awarding agency is aware of the conviction, unless an agency has considered suspension or debarment of the corporation and made a determination that this action is not necessary to protect the interests of the Government.

(b) The applicant Offeror that—

(1) It is [ ] is not [ ] a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and

(2) It is [ ] is not [ ] a corporation that was convicted of a felony criminal violation under a Federal law within the preceding 24 months.

(ii) <u>For GRANT and COOPERATIVE AGREEMENT Proposals:</u>

(1) Grant awards greater than $100,000 require a certification of compliance with a national policy mandate concerning lobbying. Statutes and Government-wide regulations require the certification to be submitted prior to award. When submitting your grant through Grants.gov, by completing blocks 18 and 19 of the SF 424 (R&R) Form, the grant applicant is providing the certification on lobbying required by 32 CFR Part 28; otherwise, a copy signed by the AOR must be provided. Below is the required certification:

CERTIFICATION AT APPENDIX A TO 32 CFR PART 28 REGARDING LOBBYING: Certification for Contracts, Grants, Loans, and Cooperative Agreements the undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a

Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit SF-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

(2) In accordance with Section 743 of P.L. 113-235 , none of the funds appropriated or otherwise made available by that or any other Act may be made available for a grant or cooperative agreement with an entity that requires its employees or contractors seeking to report fraud, waste, or abuse to sign internal confidentiality agreements or statements prohibiting or otherwise restricting those employees or contractors from lawfully reporting that waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive the information.

PROHIBITION ON CONTRACTING WITH ENTITIES THAT REQUIRED CERTAIN INTERNAL CONFIDENTIALITY AGREEMENTS – REPRESENTATION

Agreement with the representation below will be affirmed by checking the “I agree” box in block 17 of the SF424 (R&R) as part of the electronic proposal submitted via Grants.gov. The representation reads as follows:

By submission of its proposal or application, the applicant represents that it does not require any of its employees, contractors, or subrecipients seeking to report fraud, waste, or abuse to sign or comply with internal confidentiality agreements or statements prohibiting or otherwise restricting those employees, contractors, subrecipients from lawfully reporting that waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

*Note that: Section 743 states that it does not contravene requirements applicable to SF 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

(3) Recipients are required to submit the following representation with the application package IAW the instructions at Section II.D.2.f.ii of this BAA:

REPRESENTATIONS UNDER DOD ASSISTANCE AGREEMENTS:

APPROPRIATIONS PROVISIONS ON TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant is [ ] is not [ ] a "Corporation" meaning any entity, including any institution of higher education, other nonprofit organization, or for-profit entity that has filed articles of incorporation.

If the applicant is a "Corporation" please complete the following representations:

(a) The applicant represents that it is [ ] is not [ ] a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

(b) The applicant represents that it is [ ] is not [ ] a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

NOTE: If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the agency suspension and debarment official (SDO) has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore should provide information about its tax liability or conviction to the agency's SDO as soon as it can do so, to facilitate completion of the required considerations before award decisions are made.

PROHIBITION ON CONTRACTING WITH ENTITIES USING CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Section 889 of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2019 (Public Law 115-232) prohibits the head of an executive agency from obligating or expending loan or grant funds to procure or obtain, extend, or renew a contract to procure or obtain, or enter into a contract (or extend or 105 renew a contract) to procure or obtain the equipment, services, or systems prohibited systems as identified in section 889 of the NDAA for FY 2019. For more information on how this applies to all grant recipients and sub-recipients after August 13, 2020, please see DoD Research General Terms and Conditions (SEP 2021) NP Article IV. Other national policy requirements, paragraph 18.

b. Policy Requirements:

The following list provides notable national policy requirements that may be applicable to an award. NOTE: The following is not an all-inclusive list of policy requirements. For assistance awards, refer to the DoD Research and Development General Terms and Conditions at https://www.nre.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions for additional national policy requirements that may apply. For contract awards, appropriate clauses will be added to award documents.

i. PROTECTION OF HUMAN SUBJECTS:

(1) Assistance Instruments:

(a) The recipient must protect the rights and welfare of individuals who participate as human subjects in research under this award and comply fully with the requirements at 32 CFR part 219, Department of Defense Instruction (DoDI) 3216.02, 10 U.S.C. 980, the National Policy Requirements Concerning Live Organisms Terms and Conditions (Section A.1., Human Subjects, at 81 Federal Register 78380, Appendix C to Part 1122), and when applicable, Food and Drug Administration (FDA) policies and regulations.

(b) The recipient must not begin performance of research involving human subjects, also known as human subjects research (HSR), that is covered under 32 CFR part 219, or that meets exemption criteria under 32 CFR 219.101(b), or expends funding on such effort, until you receive a formal notification of approval from the cognizant DoD Human Research Protection Official (HRPO). Approval to perform HSR under this award is received after the HRPO has performed a review of the recipient's documentation of planned HSR activities and has officially furnished a concurrence with the recipient's determination as presented in the documentation.

(c) In order for the HRPO to accomplish this concurrence review, the recipient must provide sufficient documentation to enable his or her assessment as follows:

(i) If the HSR meets an exemption criteria under 32 CFR 219.101(b), the documentation must include a citation of the exemption category under 32 CFR 219.101(b) and a rationale statement.

(ii) If the recipient's activity is determined as "non-exempt research involving human subjects", the documentation must include:

- Assurance of Compliance (a written assurance that an institution will comply with requirements of 32 CFR Part 219, as well as the terms of the assurance) appropriate for the scope of work or program plan; and

- Institutional Review Board (IRB) approval, as well as all documentation reviewed by the IRB to make their determination.

(d) The HRPO retains final judgment on what activities constitute HSR, whether an exempt category applies, whether the risk determination is appropriate, and whether the planned HSR activities comply with the requirements in paragraph (a) of this section.

(e) The recipient must notify the Grants Officer/Agreements Officer immediately of any suspensions or terminations of the Assurance of Compliance.

(f) DoD staff, consultants, and advisory groups may independently review and inspect the recipient's research and research procedures involving human subjects and, based on such findings, DoD may prohibit research that presents unacceptable hazards or otherwise fails to comply with DoD requirements.

(g) Definitions for terms used in this section are found in DoDI 3216.02.

(2) Contracts: The appropriate clauses shall be added to the award.

ii. ANIMAL USE:

(1) Assistance Instruments:

(a) Prior to initiating any animal work under the award, the recipient must:

(i) Register the recipient's research, development, test, and evaluation or training facility with the Secretary of Agriculture in accordance with 7 U.S.C. 2136 and 9 CFR section 2.30, unless otherwise exempt from this requirement by meeting the conditions in 7 U.S.C. 2136 and 9 CFR parts 1-4 for the duration of the activity.

(ii) Have the recipient's proposed animal use approved in accordance with DoDI 3216.01, Use of Animals in DoD Programs by a DoD Component Headquarters Oversight Office.

(iii) Furnish evidence of such registration and approval to the grants officer.

(b) The recipient must make the animals on which the research is being conducted, and all premises, facilities, vehicles, equipment, and records that support animal care and use available during business hours and at other times mutually agreeable to the recipient, the United States Department of Agriculture Office of Animal and Plant Health Inspection Service (USDA/APHIS) representative, personnel representing the DoD component oversight offices, as well as the grants officer, to ascertain that the recipient is compliant with 7 U.S.C. 2131 et seq., 9 CFR parts 1-4, and DoDI 3216.01.

(c) The recipient's care and use of animals must conform with the pertinent laws of the United States, regulations of the Department of Agriculture, and regulations, policies, and procedures of the DoD (see 7 U.S.C. 2131 et seq., 9 CFR parts 1-4, and DoDI 3216.01).
(d) The recipient must acquire animals in accordance with DoDI 3216.01.

(2) Contracts: The appropriate clauses shall be added to the award.

iii. BIOLOGICAL DEFENSE PROGRAM SAFETY REQUIREMENTS

(1) Assistance Instruments and Contracts: Awards may be subject to biological safety program requirements IAW:

(a) Army Regulation (AR) 385-10, Chapter 20
https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN16777_ARN16343_AR385_10_FINAL.pdf

(b) Department of Army (DA) Pamphlet (PAM) 385-69 on safety standards for microbiological and biomedical laboratories. This pamphlet requires the mandatory use of the latest edition of the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC) and National Institutes of Health's (NIH) Biosafety in Microbiological and Biomedical Laboratories (BMBL)

https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/p385_69.pdf _
(c) DoD Manual 6055.18-M, Enclosure 4, Section 13
https://www.hsdl.org/?view&did=24365

iv. MILITARY RECRUITING:

(1) Assistance Instruments: This is to notify potential applicants that each grant or cooperative agreement awarded under this announcement to an institution of higher education must include the following term and condition:

(a) As a condition for receiving funds available to the DoD under this award, you agree that you are not an institution of higher education (as defined in 32 CFR part 216) that has a policy or practice that either prohibits, or in effect prevents:

(i) The Secretary of a Military Department from maintaining, establishing, or operating a unit of the Senior Reserve Officers Training Corps (ROTC)—-in accordance with 10 U.S.C. 654 and other applicable Federal laws—-at that institution (or any sub-element of that institution);

(ii) Any student at that institution (or any sub-element of that institution) from enrolling in a unit of the Senior ROTC at another institution of higher education.

(iii) The Secretary of a Military Department or Secretary of Homeland Security from gaining access to campuses, or access to students (who are 17 years of age or older) on campuses, for purposes of military recruiting in a manner that is at least equal in quality and scope to the access to campuses and to students that is provided to any other employer; or

(iv) Access by military recruiters for purposes of military recruiting to the names of students (who are 17 years of age or older and enrolled at that institution or any sub-element of that institution); their addresses, telephone listings, dates and places of birth, levels of education, academic majors, and degrees received; and the most recent educational institutions in which they were enrolled.

(b) If you are determined, using the procedures in 32 CFR part 216, to be such an institution of higher education during the period of performance of this award, we:

(i) Will cease all payments to you of DoD funds under this award and all other DoD grants and cooperative agreements; and

(ii) May suspend or terminate those awards unilaterally for material failure to comply with the award terms and conditions.

v. SUBCONTRACTING: For Contracts Only. This section is applicable to contracts

(1) Assistance Instruments: N/A

(2) Contracts: Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)), it is the policy of the Government to enable small business and small disadvantaged business (SDB) concerns to be considered fairly as subcontractors. All other than U.S. small businesses proposing contracts expected to exceed $750,000 and that have subcontracting possibilities are required to submit a subcontracting plan IAW FAR 19.702(a), and shall do so with their proposal.

Subcontracting plans are determined to be acceptable or unacceptable based on the criteria established at FAR 19.705-4, DFARS 219.705-4, and AFARS 5119.705-4. Goals are established on an individual contract basis and should result in realistic, challenging and attainable goals that, to the greatest extent possible, maximize small business participation in subcontracting for Small Business, SDB, Woman-Owned Small Business (WOSB), Economically-Disadvantaged Women-Owned Small Business (EDWOSB), Service-Disabled Veteran-Owned Small Business (SDVOSB), Veteran-Owned Small Business (VOSB), and Historically Underutilized Business Zone (HUBZone) Small Business consistent with applicants' make-or-buy policy, the pool of and availability of qualified and capable small business subcontractors, their performance on subcontracts, and existing relationships with suppliers.

Subcontracting goals should result in efficient contract performance in terms of cost, schedule, and performance and should not result in increased costs to the Government or undue administrative burden to the prime contractor. More information on the Subcontracting program and the DoD Subcontracting goals may be found at: https://business.defense.gov/About/Goals-and-Performance/

vi. EXPORT CONTROL LAWS:

(1) Contracts and Assistance Instruments: Applicants should be aware of current export control laws and are responsible for ensuring compliance with all export control laws, including International Traffic in Arms Regulation (ITAR) (22 CFR 120 et. Seq.) and the Export Administration Regulations (15 CFR 730) requirements, as applicable. In some cases, developmental items funded by the Department of Defense are now included on the United States Munition List (USML) and are therefore subject to ITAR jurisdiction. The USML is available online at https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-121. Additional information regarding the President's Export Control Reform Initiative can be found at https://www.bis.doc.gov/index.php.

vii. DRUG-FREE WORKPLACE:

(1) Assistance Instruments: The recipient must comply with drug-free workplace requirements in 32 CFR Part 26, which is the DoD implementation of 41 U.S.C. 701, "Drug-free workplace requirements for Federal contractors."

(2) Contracts: The appropriate clause(s) shall be added to the award.

viii. DEBARMENT AND SUSPENSION:

(1) Assistance Instruments: The recipient must comply with requirements regarding debarment and suspension in Subpart C of 2 CFR part 180, as adopted by DoD at 2 CFR part 1125. This includes requirements concerning the recipient's principals under an award, as well as requirements concerning the recipient's procurement transactions and subawards that are implemented in DoD Research and Development General Terms and Conditions.

(2) Contracts: The appropriate clause(s) shall be added to the award.

ix. REPORTING SUBAWARDS AND EXECUTIVE COMPENSATION:

(1) Assistance Instruments: The recipient must report information about subawards and executive compensation as specified in the award term in Appendix A to 2 CFR part 170, "Reporting subaward and executive compensation information," modified as follows:
(a) To accommodate any future designation of a different Government wide Web site for reporting subaward information, the Web site "http://www.fsrs.gov" cited in paragraphs a.2.i. and a.3 of the award provision is replaced by the phrase "http://www.fsrs.gov or successor OMB designated Web site for reporting subaward information";
(b) To accommodate any future designation of a different Government wide Web site for reporting executive compensation information, the Web site "http://www.sam.gov" cited in paragraph b.2.i. of the award provision is replaced by the phrase "https://www.sam.gov or successor OMB-designated Web site for reporting information on total compensation";

(2) Contracts: The appropriate clause(s) shall be added to the award.

3. Reporting:

a. Additional reports including number and types will be specified in the award document. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed upon before award. Reports and briefing material will also be required as appropriate to document progress in accomplishing program metrics. A final report that summarizes the project and tasks will be required at the conclusion of the performance period for the award.

b. Service Contract Reporting (SCR). For Contracts Only. See FAR 52.204-14, SAM Users Guide and DoD Guidebook for Service Contract Reporting in the System for Award Management at https://dodprocurementtoolbox.com/site-pages/service-contract-reporting-scr.

c. If the total Federal share exceeds $500,000 on any Federal award under a notice of funding opportunity, the post-award reporting requirements reflected in Appendix XII to 2 CFR 200 will be included in the award document. This requirement also applies to modifications of awards that: 1) increase the scope of the award, 2) are issued on or after January 1, 2016, and 3) increase the federal share of the award's total value to an amount that exceeds $500,000.

G. Agency Contacts:

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 Laboratory - 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 Broad Agency Announcement (BAA) should be referenced.

H. Other Information:

Below are 2 separate outlines of the informational requirements for a sample cost proposal. H.1. is for a procurement contract and H.2 for grants and cooperative agreements.

1. CONTRACT Proposals:

Cover sheet to include:

1	BAA number
2	Technical area
3	Lead organization submitting proposal
4	Type of business, selected among the following categories: “LARGE BUSINESS”, “SDB”, “OTHER SMALL BUSINESS”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, OR “OTHER NONPROFIT”
5	Contractor’s reference number (if any)
6	Other team members (if applicable) and type of business for each
7	Proposal title
8	TPOC to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available)
9	Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), and electronic mail (if available)
10	Award instrument requested: cost-plus-fixed-fee (CPFF), cost contract (no fee), cost sharing contract (no fee), or other type of procurement contract (specify)
11	Place(s) and period(s) of performance
12	Total proposed cost separated by basic award and option(s) (if any)

13	Name, address, and telephone number of the proposer's cognizant Defense Contract Management Agency (DCMA) administration office (if known)
14	Name, address, and telephone number of the proposer's cognizant Defense Contract Audit Agency (DCAA) audit office (if known)
15	Date proposal was prepared
16	Unique Entity Identifier number
17	TIN number
18	CAGE code
19	Subcontractor information
20	Proposal validity period
21	Any Forward Pricing Rate Agreement, other such approved rate information, or such other documentation that may assist in expediting negotiations (if available)

a. Reasoning for Submitting a Strong Cost Proposal

The ultimate responsibility of the Contracting Officer is to ensure that all prices offered in a proposal are fair and reasonable before contract award. To establish the reasonableness of the offered prices, the Contracting Officer may ask the applicant to provide supporting documentation that assists in this determination. The applicant's ability to be responsive to the Contracting Officer's requests can expedite contract award. As specified in Section 808 of Public Law 105-261, an applicant who does not comply with a requirement to submit information for a contract or subcontract in accordance with paragraph (a)(1) of FAR 15.403-3 may be ineligible for award.

b. DCAA-Accepted Accounting System

i. Before a cost-reimbursement type contract can be awarded, the Contracting Officer must confirm that the applicant has a DCAA-accepted accounting system in place for accumulating and billing costs under Government contracts [FAR 53.209-1(f)]. If the applicant has DCAA correspondence, which documents the acceptance of its accounting system, this should be provided to the Contracting Officer (i.e. attached or referenced in the proposal). Otherwise, the Contracting Officer will submit an inquiry directly to the appropriate DCAA office and request a review of the applicant's accounting system.

ii. If an applicant does not have a DCAA-accepted accounting system in place, the DCAA review process can take several months depending upon the availability of the DCAA auditors and the applicant's internal processes. This will delay contract award.

iii. For more information about cost proposals and accounting standards, view the link titled "Information for Contractors" on the main menu of the DCAA website.

c. Field Pricing Assistance

During the pre-award cost audit process, the Contracting Officer may solicit support from DCAA to determine commerciality and price reasonableness of the proposal [FAR 15.404-2]. Any proprietary information or reports obtained from DCAA field audits will be appropriately identified and protected within the Government.

d. Sample Cost Proposal – "Piece by Piece"

To help guide applicant s through the pre-award cost audit process, a sample cost proposal is detailed below. This sample allows the applicant to see exactly what the Government is looking for so that all cost and pricing back-up data can be provided to the Government in the first cost proposal submission. Review each cost element within the proposal, and take note of the types of documentation that the Contracting Officer will require from the applicant.

i. *Direct Labor*: The first cost element included in the cost proposal is Direct Labor. Each proposed employee must be listed by name and labor category.

Below is the Direct Labor as proposed by our sample applicant:

DIRECT LABOR		YEAR 1			YEAR 2		
Employee Name	**Labor Category**	**Direct Hourly Rate**	**Hours**	**Total Direct Labor**	**Direct Hourly Rate**	**Hours**	**Total Direct Labor**
Andy Smith	Program Manager	$55.00	720.00	$39,600.00	$56.65	720.00	$40,788.00
Bryan Andrews	Senior Engineer	$40.00	672.00	$26,880.00	$41.20	672.00	$27,686.40
Cindy Thomas	Principal Engineer	$50.00	512.00	$25,600.00	$51.50	512.00	$26,368.00
David Porter	Entry Level Engineer	$10.00	400.00	$4,000.00	$10.30	400.00	$4,120.00
Edward Bean	Project Administrator	$25.00	48.00	$1,200.00	$25.75	48.00	$1,236.00
Subtotal Direct Labor (DL)				$97,280.00			$100,198.40

(1) For this cost element, the Contracting Officer requires the applicant to provide adequate documentation in order to determine that the labor rate for each employee/labor category is fair and reasonable. The documentation must explain how these labor rates were derived. For example, if the rates are DCAA-approved labor rates, provide the Contracting Officer with copies of the DCAA documents stating the approval. This is the most acceptable means of documentation to determine the rates fair and reasonable. Other types of supporting documentation may include General Service Administration (GSA) contract price lists, actual payroll journals, or Salary.com research. If an employee listed in a cost proposal is not a current employee (maybe a new employee, or one contingent upon the award of this contract), a copy of the offer letter stating the hourly rate, signed and accepted by the employee, may be provided as adequate documentation.

Sometimes the hourly rates listed in a proposal are derived through subjective processes, i.e., blending of multiple employees in one labor category, or averaged over the course of the year to include scheduled payroll increases, etc. These situations should be clearly documented for the Contracting Officer.

(2) Another cost element in Direct Labor is labor escalation, or the increase in labor rates from year to year. In the example above, the proposed labor escalation is 3% (ex., Andy Smith's direct labor rate increased by 3% from $55.00/hour in Year 1 to $56.65/hour in Year 2). Often times, an applicant may not propose escalation on labor rates during a 24-month period. Whatever the proposed escalation rate is, please be prepared to explain why it is fair and reasonable. For example, a sufficient explanation for our sample escalation rate would be "The Government's General Schedule Increase and Locality Pay for the same time period (name fiscal year) in the

same location (name location) was published as 3.5%; therefore a 3% increase is fair and reasonable".

ii. *Other Direct Costs (ODCs)*: This section of the cost proposal includes all other directly-related costs required in support of the effort (i.e., materials, subcontractors, consultants, travel, etc.). Any cost element that includes various items must be detailed in a cost breakdown.

(1) Direct Material Costs: This subsection of the cost proposal will include any special tooling, test equipment, and material costs necessary to perform the project. Items included in this section must be carefully reviewed relative to need and appropriateness for the work proposed, and must, in the opinion of the Contracting Officer, be advantageous to the Government and directly related to the specific topic.

The Contracting Officer will require adequate documentation from the applicant to determine the cost reasonableness for each material cost proposed. The following methods are ways in which the Contracting Officer can determine this [FAR 15.403-1]:

> (a) Adequate Price Competition. A price is based on adequate price competition when the applicant solicits and receives quotes from two or more responsible vendors for the same or similar items or services. Based on these quotes, the applicant selects the vendor who represents the best value to the Government. The applicant will be required to provide to the Contracting Officer copies of all vendor quotes received.
>
> *NOTE: Price competition is not required for items at or below the micro-purchase threshold ($10,000 - FAR 15.403-1]. If an item's unit cost is less than or equal to $10,000, price competition is not necessary. However, if an item's total cost over the period of performance (unit cost x quantity) is higher than $10,000, two or more quotes must be obtained by the applicant.
>
> (b) Commercial Prices. Commercial prices are those published on current price lists, catalogs, or market prices. This includes vendors who have prices published on a GSA-schedule contract. The applicant will be required to provide copies of such price lists to the Contracting Officer.
>
> (c) Prices set by law or regulation. If a price is mandated by the Government (i.e. pronouncements in the form of periodic rulings, reviews, or similar actions of a governmental body, or embodied in the laws) that is sufficient to set a price.

Below is the list of Direct Material costs included in our sample proposal:

DIRECT MATERIAL COSTS	YEAR 1	YEAR 2
Raw Materials	$35,000.00	$12,000.00
Computer for experiments	$4,215.00	$0.00
Cable (item #12-3657, 300 ft)	$1,275.00	$0.00
Software	$1,825.00	$1,825.00
Subtotal Direct Materials Costs	$42,315.00	$13,825.00

"Raw Materials": This is a generic label used to group many material items into one cost item within the proposal. The Contracting Officer will require a detailed breakout of all the items that make up this cost. For each separate item over $10,000 (total for Year 1 + Year 2), the applicant must be able to provide either competitive quotes received, or show that published pricing was used.

"Computer for experiments": This item is most likely a grouping of several components that make up one system. The Contracting Officer will require a detailed breakout of all the items that make up this cost. For each separate item over $10,000 (total for Year 1 + Year 2), the applicant must be able to provide either competitive quotes received, or show that published pricing was used.

"Cable": Since this item is under the micro-purchase threshold of $10,000, competitive quotes or published pricing are not required. Simply provide documentation to show the Contracting Officer where this price came from.

"Software": This cost item could include either one software product, or multiple products. If this includes a price for multiple items, please provide the detailed cost breakdown. Note: The price for Year 1 ($1,825) is below the micro-purchase threshold; however, in total (Year 1 + Year 2) the price is over $10,000, so competitive quotes or published pricing documentation must be provided.

Due to the specialized types of products and services necessary to perform these projects, it may not always be possible to obtain competitive quotes from more than one reliable source. Each cost element over the micro-purchase threshold ($10,000) must be substantiated. There is always an explanation for how the cost of an item was derived; document how you came up with that price.

When it is not possible for an applicant to obtain a vendor price through competitive quotes or published price lists, the Contracting Officer may accept other methods to determine cost reasonableness. Below are some examples of other documentation, which the Contracting Officer may accept to substantiate costs:

(a) Evidence that a vendor/supplier charged another applicant a similar price for similar services. Has the vendor charged someone else for the same product? Two (2) to three (3) invoices from that vendor to different customers may be used as evidence.

(b) Previous contract prices. Has the applicant charged the Government a similar price under another Government contract for similar services? If the Government has already paid a certain price for services, then that price may already be considered fair and reasonable. Provide the contract number, and billing rates for reference.

(c) DCAA approved. Has DCAA already accepted or verified specific cost items included in your proposal? Provide a copy of DCAA correspondence that addressed these costs.

(2) ODCs: Below is the remaining ODC portion of our proposal including equipment, subcontractors, consultants, and travel. Assume in this scenario that competitive quotes or catalog prices were not available for these items:

ODCs	YEAR 1	YEAR 2
Equipment Rental for Analysis	$5,500.00	$5,600.00
Subcontractor – Widget, Inc.	$25,000.00	$0.00
Consultant: John Bowers	$0.00	$12,000.00
Travel	$1,250.00	$1,250.00
Subtotal: ODCs	$31,750.00	$18,850.00

"Equipment Rental for Analysis": The applicant explains that the Year 1 cost of $5,500 is based upon 250 hours of equipment rental at an hourly rate of $22.00/hr. One (1) invoice from the vendor charging another vendor the same price for the same service is provided to the Contracting Officer as evidence. Since this cost is over the micro-purchase threshold, further documentation to determine cost reasonableness is required. The applicant can furnish another invoice charging a second vendor the same price for the same service.

"Subcontractor – Widget, Inc.": The applicant provides a copy of the subcontractor quote to the Contracting Officer in support of the $25,000 cost. This subcontractor quote must include sufficient detailed information (equivalent to the data included in the prime's proposal to the Government), so that the Contracting Officer can make a determination of cost reasonableness.

(a) As stated in Section 3.5(c)(6) of the DoD Cost Proposal guidance, "All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regards to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in your cost proposal."

(b) In accordance with FAR 15.404-3, "the Contracting Officer is responsible for the determination of price reasonableness for the prime contract, including subcontracting costs". This means that the subcontractor's quote/proposal may be subject to the same scrutiny by the Contracting Officer as the cost proposal submitted by the prime. The Contracting Officer will need to determine whether the subcontractor has an accepted purchasing system in place and/or conduct appropriate cost or price analyses to establish the reasonableness of proposed subcontract prices. Due to the proprietary nature of cost data, the subcontractor may choose to submit their pricing information directly to the Contracting Officer and not through the prime. This is understood and encouraged.

(c) When a subcontractor is selected to provide support under the prime contract due to its specialized experience, the Contracting Officer may request sole source justification from the applicant.

"Consultant – John Bowers": The applicant shall provide a copy of the consultant's quote to the Contracting Officer as evidence. In this example, the consultant will be charging an hourly rate of $125 an hour for 96 hours of support. The applicant indicates to the Contracting Officer that

this particular consultant was used on a previous contract with the Government (provide contract number), and will be charging the same rate. A copy of the consultant's invoice to the applicant under the prior contract is available as supporting evidence. Since the Government has paid this price for the same services in the past, determination has already been made that the price is fair.

"Travel": The Contracting Officer will require a detailed cost breakdown for travel expenses to determine whether the total cost is reasonable based on Government per diem and mileage rates. This breakdown shall include the number of trips, the destinations, and the number of travelers. It will also need to include the estimated airfare per round trip, estimated car rental, lodging rate per trip, tax on lodging, and per diem rate per trip. The lodging and per diem rates must comply with the Joint Travel Regulations. Please see the following website to determine the appropriate lodging and per diem rates: http://www.defensetravel.dod.mil. Additionally, the applicant must provide why the airfare is fair and reasonable as well. Sufficient back up for both airfare and car rental would include print outs of online research at the various travel search engines (Expedia, Travelocity, etc.), documenting the prices for airfare and car rentals are fair and reasonable.

Below is a sample of the travel portion:

TRAVEL	Unit	Trips	Travelers	Nights	Days	Unit Cost	Total Travel
Airfare	roundtrip	1	1			$996.00	$996.00
Lodging	day	1	1	1		$75.00	$75.00
Tax on Lodging (12%)	day	1	1	1		$9.00	$9.00
Per Diem	day	1	1		2	$44.00	$88.00
Automobile Rental	day	1	1		2	$41.00	$82.00
Subtotal Travel							$1,250.00

iii. *Indirect Costs*: Indirect costs include elements such as fringe benefits, general and administrative (G&A), overhead, and material handling costs. The applicant shall indicate in the cost proposal both the indirect rates (as a percentage) as well as how those rates are allocated to the costs in the proposal.

Below is the indirect portion of our sample proposal:

INDIRECTS	YEAR 1	YEAR 2
Subtotal Direct Labor (DL):	$97,280.00	$100,198.40
Fringe Benefits, if not included in Overhead, rate (15.0000 %) X DL =	$14,592.00	$15,029.76
Labor Overhead (rate 45.0000 %) X (DL + Fringe) =	$50,342.40	$51,852.67
Total Direct Labor (TDL):	$162,214.40	$167,080.83

In this example, the applicant includes a fringe benefit rate of 15.00% that it allocated to the direct labor costs. The applicant also proposes a labor overhead rate of 45.00% that is allocated to the direct labor costs plus the fringe benefits.

All indirect rates and the allocation methods of those rates must be verified by the Contracting Officer. In most cases, DCAA documentation supporting the indirect rates and allocation methods can be obtained through a DCAA field audit or proposal review. Many applicants have already completed such reviews and have this documentation readily available. If an applicant is unable to participate in a DCAA review to substantiate indirect rates, the Contracting Officer may request other accounting data from the applicant to make a determination.

iv. *Facilities Capital Cost of Money (FCCM)*: Cost of money is an imputed cost that is not a form of interest on borrowings (see FAR 31.205-20). FCCM is an "incurred cost" for cost-reimbursement purposes under applicable cost-reimbursement contracts and for progress payment purposes under fixed-price contracts. It refers to (1) FCCM (48 CFR 9904.414) and (2) cost of money as an element of the cost of capital assets under construction (48 CFR 9904.417). If cost of money is proposed in accordance with FAR 31.205-10, a DD Form 1861 is required to be completed and submitted with the applicant's proposal.

v. *Fee/Profit*: The proposed fee percentage will be analyzed in accordance with DFARS 215.404, the Weighted Guidelines Method.

vi. *Subcontracting Plan*: If the total amount of the proposal exceeds $750,000 and the applicant is a large business or an institute of higher education (other than HBCU/MI) and the resultant award is a contract, the applicant shall be prepared to submit a subcontracting plan for small business and SDB concerns. A mutually agreeable plan will be included in and made a part of the contract (see Section II.F.2.b.v).

2. GRANT and COOPERATIVE AGREEMENT Proposals

Before award it must be established that an approved accounting system and financial management system exist.

a. *Direct Labor*: Show the current and projected salary amounts in terms of man-hours, man-months, or annual salary to be charged by the PI(s), faculty, research associates, postdoctoral associates, graduate and undergraduate students, secretarial, clerical, and other technical personnel either by personnel or position. State the number of man-hours used to calculate a man-month or man-year. For proposals from universities, research during the academic term is deemed part of regular academic duties, not an extra function for which additional compensation or compensation at a higher rate is warranted. Consequently, academic term salaries shall not be augmented either in rate or in total amount for research performed during the academic term. Rates of compensation for research conducted during non-academic (summer) terms shall not exceed the rate for the academic terms. When part or all of a person's services are to be charged as project costs, it is expected that the person will be relieved of an equal part or all of his or her regular teaching or other obligations. For each person or position, provide the following information:

i. The basis for the direct labor hours or percentage of effort (e.g., historical hours or estimates);

ii. The basis for the direct labor rates or salaries. Labor costs should be predicted upon current labor rates or salaries. These rates may be adjusted upward for forecast salary or wage cost-of-living increases that will occur during the agreement period. The cost proposal should separately identify the rationale applied to base salary/wage for cost-of-living adjustments and merit increases. Each must be fully explained;

iii. The portion of time to be devoted to the proposed research, divided between academic and non-academic (summer) terms, when applicable;

iv. The total annual salary charged to the research project; and

v. Any details that may affect the salary during the project, such as plans for leave and/or remuneration while on leave.

Note: There is no page limitation for budget proposals or budget justifications.

b. *Fringe Benefits and Indirect Costs (Overhead, G&A, and Other)*: The most recent rates, dates of negotiation, the base(s) and periods to which the rates apply must be disclosed and a statement included identifying whether the proposed rates are provisional or fixed. If the rates have been negotiated by a Government agency, state when and by which agency. A copy of the negotiation memorandum should be provided. If negotiated forecast rates do not exist, applicants must provide sufficient detail to enable a determination to be made that the costs included in the forecast rate are allocable according to applicable cost provisions. Applicants' disclosure should be sufficient to permit a full understanding of the content of the rate(s) and how it was established. As a minimum, the submission should identify:

i. All individual cost elements included in the forecast rate(s);

ii. Basis used to prorate indirect expenses to cost pools, if any;

iii. How the rate(s) was calculated;

iv. Distribution basis of the developed rate(s);

v. Basis on which the overhead rate is calculated, such as "salaries and wages" or "total costs;" and

vi. The period of the applicant's fiscal year.

c. *Permanent Equipment*: If facilities or equipment are required, a justification why this property should be furnished by the Government must be submitted. State the organization's inability or unwillingness to furnish the facilities or equipment. Applicants must provide an itemized list of permanent equipment showing the cost for each item. Permanent equipment is any article or tangible nonexpendable property having a useful life of more than one year and an acquisition cost of $5,000 or more per unit. The basis for the cost of each item of permanent equipment included in the budget must be disclosed, such as:

i. Vendor Quote: Show name of vendor, number of quotes received and justification, if intended award is to other than lowest bidder.

ii. Historical Cost: Identify vendor, date of purchase, and whether or not cost represents lowest bid. Include reason(s) for not soliciting current quotes.

iii. Engineering Estimate: Include rationale for quote and reason for not soliciting current quotes.

If applicable, the following additional information shall be disclosed in the applicant's cost proposal:

iv. Special test equipment to be fabricated by the awardee for specific research purposes and its cost.

v. Standard equipment to be acquired and modified to meet specific requirements, including acquisition and modification costs, listed separately.

vi. Existing equipment to be modified to meet specific research requirements, including modification costs. Do not include equipment the organization will purchase with its funds if the equipment will be capitalized for Federal income tax purposes. Proposed permanent equipment purchases during the final year of an award shall be limited and fully justified.

vii. Grants and cooperative agreements may convey title to an institution for equipment purchased with project funds. At the discretion of the Contracting/Grants Officer, the agreement may provide for retention of the title by the Government or may impose conditions governing the equipment conveyed to the organization per the governing laws and regulations.

d. *Travel*: Forecasts of travel expenditures (domestic and foreign) that identify the destination

and the various cost elements (airfare, mileage, per diem rates, etc.) must be submitted. The costs should be in sufficient detail to determine the reasonableness of such costs. Allowance for air travel normally will not exceed the cost of round-trip, economy air accommodations. Specify the type of travel and its relationship to the research project. Separate, prior approval by the ARL is required for all foreign travel (i.e., travel outside the continental U.S., its possessions and Canada). Travel may be requested to visit Army laboratories and facilities to enhance agreement objectives and to achieve technology transfer.

e. *Participant Support Costs*: This budget category refers to costs of transportation, per diem, stipends, and other related costs for participants or trainees (but not employees) in connection with ARL-sponsored conferences, meetings, symposia, training activities, apprenticeships and workshops (see the "Other Programs" section as described earlier in this BAA). Generally, indirect costs are not allowed on participant support costs. The number of participants to be supported should be entered in the parentheses on the budget form. These costs should also be justified in the budget justification page(s) attached to the cost proposal.

f. *Materials, Supplies, and Consumables*: A general description and total estimated cost of expendable equipment and supplies are required. The basis for developing the cost estimate (vendor quotes, invoice prices, engineering estimate, purchase order history, etc.) must be included. If possible, provide a material list.

g. *Publication, Documentation, and Dissemination*: The budget may request funds for the costs of preparing, publishing, or otherwise making available to others the findings and products of the work conducted under an agreement, including costs of reports, reprints, page charges, or other journal costs (except costs for prior or early publication); necessary illustrations, cleanup, documentation, storage, and indexing of data and databases; and development, documentation, and debugging of software.

h. *Consultant Costs*: Applicants normally are expected to utilize the services of their own staff to the maximum extent possible in managing and performing the project's effort. If the need for consultant services is anticipated, the nature of proposed consultant services should be justified and included in the technical proposal narrative. The cost proposal should include the names of consultant(s), primary organizational affiliation, each individual's expertise, daily compensation rate, number of days of expected service, and estimated travel and per diem costs.

i. *Computer Services*: The cost of computer services, including computer-based retrieval of scientific, technical, and educational information, may be requested. A justification/explanation based on the established computer service rates at the proposing organization should be included. The budget also may request costs, which must be shown to be reasonable, for leasing automatic data processing equipment. The purchase of computers or associated hardware and software should be requested as items of equipment.

j. *Subawards (Subcontracts or Subgrants)*: A precise description of services or materials that are to be awarded by a subaward must be provided. For subawards totaling $10,000 or more, provide the following specific information:

- A clear description of the work to be performed;
- If known, the identification of the proposed subawardee and an explanation of why and how the subawardee was selected or will be selected;
- The identification of the type of award to be used (cost reimbursement, fixed price, etc.);
- Whether or not the award will be competitive and, if noncompetitive, rationale to justify the absence of competition; and
- A detailed cost summary.

k. *ODCs*: Itemize and provide the basis for proposed costs for other anticipated direct costs such as communications, transportation, insurance, and rental of equipment other than computer related items. Unusual or expensive items must be fully explained and justified.

l. *Profit/ Fee*: Profit/fee is not allowed for the recipient of or subaward to an assistance instrument, where the principal purpose of the activity to be carried out is to stimulate or support a public purpose (i.e., to provide assistance), rather than acquisition (i.e., to acquire goods and services for the direct benefit of the Government). A subaward is an award of financial assistance in the form of money, or property in lieu of money, made under a DoD grant or cooperative agreement by a recipient to an eligible subrecipient. The term includes financial assistance for substantive program performance by the subrecipient of a portion of the program for which the DoD grant or cooperative agreement was made. It does not include the recipient's procurement of goods and services needed to carry out the program.

m. *Subcontracting Plan*: Subcontracting plans do not apply to assistance instruments.

n. *FCCM*: If cost of money is proposed, a completed FCCM (DD Form 1861) is required.