



FEDERAL AWARDING AGENCY: Washington Headquarters Services Acquisition Directorate (WHS/AD)

FUNDING OPPORTUNITY TITLE: Department of Defense (DoD) Science, Technology, Engineering, and Mathematics (STEM) National Defense Education Program (NDEP) Notice of Funding Opportunity (NFO)

ANNOUNCEMENT TYPE: Initial Announcement

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ASSISTANCE LISTING: 12.006 National Defense Education Program

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This NFO is a continuously open announcement. Amendments to this NFO will be posted to Grants.gov if they occur. Amendments will detail requirements for white paper submissions, and select white paper submissions will be invited to submit a full application.

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I. PROGRAM DESCRIPTION

A. SHORT DESCRIPTION OF FUNDING OPPORTUNITY

The Department of Defense (DoD) Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) seeks innovative applications on mechanisms to implement and research the effectiveness of STEM education, outreach, and/or workforce initiative programs, here onto referred as STEM activities.

In response to this NFO, the Department intends to release amendments and solicitations, such as Industry Days, Opportunity Days, etc., detailing funding

opportunities through award(s) in STEM activities. These activities include, but are not limited to:

- (1) STEM Education and Outreach
- (2) Support for STEM Education at Two-Year Institutions/Community Colleges (2YI/CCs)
- (3) Manufacturing Engineering Education Program
- (4) Education and Workforce Development aligned to the DoD Critical Technology Areas
- (5) Enhanced Civics Education
- (6) STEM Scholarship Programs
- (7) Strategic Partnerships
- (8) Program Evaluations and Assessments
- (9) Data Analytics and Visualizations
- (10) Activities aligned to the DoD STEM Strategic Plan¹
- (11) Other NDEP Congressional Initiatives and Programs

In response to this NFO, applicants may be asked for a mandatory white paper submission, emailed to osd.dodstem@mail.mil. Use of the white paper is intended to determine which efforts are of merit preparatory to submission of a full application as described in Section IV. Applicants will be selected from the white paper submissions to be ***invited by the Government via email*** to submit a full application on Grants.gov for evaluation and possible award consideration. White papers that fail to address the areas listed in the Program Description of the NFO amendment or Industry Day/Opportunity Day announcement will not be evaluated and will not receive an invitation to submit a full technical application.

The submission of a white paper is dependent on the NFO amendment or Industry Day/Opportunity Day announcement. In addition to the submission requirements outlined in Section IV, all responses should address items in the specific NFO amendment or Industry Day/Opportunity Day announcement.

B. BACKGROUND

The Federal STEM Education Strategic Plan states, “The pace of innovation is accelerating globally, and with it the competition for scientific and technical talent. Now more than ever the innovation capacity of the United States—and its prosperity and security—depends on an effective and inclusive STEM education ecosystem”.² A readily accessible, highly technical and diverse STEM talent is essential to the success of the Department’s Research and Engineering mission, and a national security imperative. The National Defense Strategy has called for the Department of Defense to make significant investments in critical technology areas to meet key capability and capacity needs, and a diverse technical talent is essential in completing this mission. As the largest employer of Federal scientists

¹ https://dodstem-assets.dodstem.us/files/DoD_STEM_Strategic_Plan_2021.pdf

² America’s Strategy for STEM Education - <https://trumpwhitehouse.archives.gov/wp-content/uploads/2018/12/STEM-Education-Strategic-Plan-2018.pdf>

and engineers across the Federal agencies, the DoD is committed to developing the Nation's STEM talent.

The DoD employs a comprehensive approach to develop STEM talent for kindergarten through 12th grade (K-12), postsecondary students, and workforces within and beyond the DoD, known as DoD STEM.³ OUSD(R&E) provides policy and oversight for DoD STEM. DoD STEM is inclusive of Department-wide efforts that address near-, mid-, and long-term STEM talent development efforts. DoD STEM follows the DoD STEM Strategic Plan,⁴ which is aligned with the Federal STEM Education Strategic Plan,⁵ to ensure a diverse and sustainable STEM talent pool ready to serve the Nation and evolve the DoD's competitive edge.

This NFO invites proposers to submit innovative ideas to the topics of interest, below.

C. TOPICS OF INTEREST

In accordance with 10 USC §2192, *Improvement of education in technical fields: general authority regarding education in science, technology, engineering, and mathematics*, OUSD(R&E) is seeking a broad range of programs to support the DoD STEM mission to “attract, inspire, and develop exceptional STEM talent across the education continuum to enrich the current and future DoD workforce to meet defense technological challenges.” The goal of any proposed effort must provide solutions that will establish and maintain a STEM talent pool with an aptitude for innovation, diversity of thought, and the technical agility to sustain the Department's competitive edge.

The Department seeks to complement its portfolio of programs (<https://dodstem.us/participate/opportunities/>) while maintaining and/or increasing its focus on underserved populations to include military-connected children and student veterans, as described in the DoD STEM Strategic Plan. This announcement explicitly encourages projects that improve the capacity of education systems and communities to create impactful STEM educational experiences for students and teachers, and prepare the 21st century technical workforce. Funding efforts will be targeted primarily towards programs that are aligned with the Federal STEM Education Strategy's vision for a future where all Americans will have lifelong access to high-quality STEM education, and the United States will be the global leader in STEM literacy, innovation, and employment. This consists of strategic partnerships, convergence, and building computational literacy, and aligns with DoD STEM's mission.

DoD STEM encourages proposals from Minority Serving Institutions (MSIs) as well as other institutions that support the recruitment, retention, and completion

³ <http://dodstem.us/>

⁴ https://dodstem-assets.dodstem.us/files/DoD_STEM_Strategic_Plan_2021.pdf

⁵ <https://dodstem-assets.dodstem.us/files/2018-23-Federal-STEM-Education-Strategic-Plan.pdf>

(certificate, degree, program) of groups historically underrepresented in STEM fields. DoD STEM is particularly interested in proposals from all types of Minority Serving Institutions, including Hispanic Serving Institutions, Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities, and Alaska Native and Native Hawaiian Serving Institutions and programs serving students underserved or underrepresented in STEM.

Specific initiatives supported through this NFO include, but are not limited to, topics outlined in the following sections.

(1) Science, Technology, Engineering, and Mathematics (STEM) Education and Outreach

STEM education and workforce development is a priority of the Department, and the DoD seeks methods in which it can more effectively cultivate a diverse, agile, and world-class STEM workforce. Through effective programming, the DoD supports the transformation of a STEM talent pool that will lead the Department and the Nation into the future. The Department fully encourages future workforce development initiatives that align with the strategic, operational, and tactical needs of our nation's defense. By encouraging a broad range of innovative education and workforce development approaches, the DoD aims to put the 21st century STEM workforce in a position for success in an ever-changing and increasingly competitive world.

Project scope may range in size and complexity. Projects may have an emphasis on hands on- problem based learning activities, mentor-centered programming, education outcomes, invention education, Convergence Education (see Appendix for definition), Computational Literacy (see Appendix for definition), an awareness of the multiple STEM disciplines, and/or career pathways/opportunities in the DoD.

(2) Support for STEM Education at Two-Year Institutions/Community Colleges (2YI/CCs)

STEM education is expanding beyond traditional engineering and scientific communities and it is increasingly critical for industrial skills proficiency. As such, the Skilled Technical Workforce (STW)⁶ and 2YI/CCs are vital to the education and innovation of our Nation. In 2019, 2YI/CCs educated 41% of all undergraduate students.⁷ Further, the student body of community colleges have a breadth of racial and ethnic representation: among undergraduate students, 56% of Native American students, 53% of Hispanic students, 43% of Black students, and 38% of

⁶ STW is a term for occupations that require a high-level of knowledge in a technical domain but do not require a bachelor's degree.

⁷ <https://www.aacc.nche.edu/research-trends/fast-facts/>

Asian/Pacific Islander students attend Community College.⁸ Additionally, 2YI/CCs reach other non-traditional students such as parents,⁹ students that are also employed part- or full-time,¹⁰ and military personnel.¹¹ However, 2YI/CCs and their students face a unique set of challenges, including, but not limited to, a lack of work-based and research-based opportunities tailored to 2YI/CC students, a need for seamless transition of credit to 4YIs and the workplace, wraparound support services (factors affecting student engagement and participation, for example, childcare, transportation, auxiliary costs), administrative support to execute programs, and the need for mentoring and advising tailored to the unique needs and backgrounds of 2YI/CC students.

The Department may seek to directly support STEM and STW education at 2YIs/CCs by developing exceptional STEM and STW talent. This may look like a regional consortium-based model, grant, or other award. Through grants and/or cooperative agreement awards to regional consortia or 2YI/CCs, DoD STEM aims to foster communication, collaboration, and a STEM education ecosystem around 2YI/CCs. Two-Year Institutions and Community Colleges benefit from strong connections to both industry and 4YIs; these regional ecosystems can ensure their coursework and programs address the current need for workers and prepares students for future curricula. Awards should promote the capacity of 2YI/CCs to create impactful STEM and STW educational experiences for students, including, but not limited to, collaborative partnerships.

The DoD seeks programs that emphasize areas that support the future mission of the DoD. These include DoD critical technology areas, such as biotechnology, cyber, microelectronics, and autonomy, from the research and development phase through advanced manufacturing.¹² The DoD is interested in supporting placement of qualified students, upon completion of the program, to DoD and DIB manufacturing, research, and career opportunities, or a pathway to other educational opportunities. Proposed programs should be able to demonstrate an understanding of the needs of 2YI/CCs in regards to STEM and STW education, potential solutions, and outcomes from enhanced quality and effectiveness of 2YI/CC support.

(3) Manufacturing Engineering Education Program

A robust, highly skilled advanced manufacturing workforce is critical in defense-focused industrial strategy, which requires innovative and bold solutions of complex systems. The manufacturing sector is a critical

⁸ https://www.aacc.nche.edu/wp-content/uploads/2019/01/DataPoints_V7_N2.pdf

⁹ <https://www.aacc.nche.edu/2021/01/20/42067/>

¹⁰ https://www.aacc.nche.edu/wp-content/uploads/2019/01/DataPoints_V7_N2.pdf

¹¹ <https://www.aacc.nche.edu/wp-content/uploads/2018/11/DataPointsV6N17.pdf>

¹² <https://www.cto.mil/modernization-priorities/>

foundation of our Nation's workforce prepared to support defense missions.¹³ In manufacturing, for every job that requires a master's degree or more, two jobs require a four-year degree, and seven jobs require a one-year certificate or two-year degree.¹⁴ However, there is an acute skills gap between current and future manufacturing jobs and the skilled talent pool capable of filling them; a 2018 study found that a manufacturing skills gap may leave an estimated 2.4 million positions unfilled by 2028.¹⁵ Further, less than half of Americans believe that manufacturing jobs are interesting, rewarding, clean, safe, stable, and secure, leading to only 27 percent of parents who would encourage their children to pursue a manufacturing career.¹⁶

The National Defense Authorization Act (NDAA) for Fiscal Year 2017 established the "Manufacturing Engineering Education Program," (MEEP) (10 U.S.C. § 4843) which authorizes the DoD to support industry-relevant, manufacturing-focused, engineering training at United States institutions of higher education, industry, nonprofit institutions, and consortia of such institutions or industry.

The Department may seek to further support MEEP through establishing new or to enhancing existing programs (or collections of programs) to better position the current and next-generation manufacturing workforce to produce military systems and components that assure technological superiority for the DoD.

Interested parties should focus programs on manufacturing education to support one or more distinct manufacturing technologies; e.g. manufacturing of lightweight structures, systems and materials; robotics for manufacturing; manufacturing to exploit nanotechnology; manufacturing of components and systems for power generation, storage, or distribution; manufacturing of multi-functional electronics and/or optical devices; or other manufacturing technologies of regional or industrial sector of interest.

Proposed efforts should develop and enhance curricula and programs to effectively develop skills sets needed for students to operate in multidisciplinary design and manufacturing environments, including those for which manufacturing schema are informed by computational tools for

¹³ Pisano, Gary P., and Willy C. Shih. "Does America Really Need Manufacturing?" Harvard Business Review, (March 2012), 90, no. 3

¹⁴ "Manufacturing Workforce Development Playbook: Preparing for the manufacturing renaissance in America." 2014. Edited by Keith S. Campbell. Published by Summit Media Group.

¹⁵ "2018 Deloitte skills gap and future of work in manufacturing study." 2018.

https://www2.deloitte.com/content/dam/insights/us/articles/4736_2018-Deloitte-skills-gap-FoW-manufacturing/DI_2018-Deloitte-skills-gap-FoW-manufacturing-study.pdf

¹⁶ Deloitte and the Manufacturing Institute, "A look ahead How modern manufacturers can create positive perceptions with the US public." 2017, <http://www.themanufacturinginstitute.org>

modeling and simulation. Students also should be prepared to work effectively in environments where multiple engineering disciplines are engaged during design, development and manufacturing, and where the roles of manufacturers and suppliers in businesses of various sizes, from start-ups to major systems integrators, are optimized.

Any proposed program or collection of programs should be able to demonstrate the increased understanding of manufacturing engineering challenges and potential solutions, and the enhanced quality and effectiveness of the instruction that result from that increased understanding.

(4) Education and Workforce Development Aligned to the DoD Critical Technology Areas

To ensure enduring US leadership in science and technology, it is critical to support education and training in DoD critical technology areas¹⁷ to develop a robust technical workforce. The Department seeks to enhance its portfolio of programs by focusing on activities aligned to critical technology areas by explicitly encouraging proposals that improve capability of education systems and communities to create impactful educational experiences for students and teachers and prepare the 21st century technical workforce. Current critical technology areas include:

- Biotechnology
- Quantum Science
- Future Generation Wireless Technology (Future G)
- Advanced Materials
- Trusted AI and Autonomy
- Integrated Network Systems-of-Systems
- Microelectronics
- Space Technology
- Renewable Energy Generation and Storage
- Advanced Computing and Software
- Human-Machine Interfaces
- Directed Energy
- Hypersonics
- Integrated Sensing and Cyber

Funding efforts will be targeted primarily towards programs, both formal and informal, with a vision for a future where all Americans will have lifelong access to high-quality education, and the United States will be the global leader in innovation, and employment. Applicants should include how proposed efforts connect to this vision.

¹⁷ <https://www.cto.mil/usdre-strat-vision-critical-tech-areas/>

(5) Enhanced Civics Education

In accordance with Section 234 of the FY2020 NDAA (in the Appendix), NDEP may seek applications on programs that provide Enhanced Civics education in areas such as critical thinking and media literacy, and interest in employment, and careers, in public service. This includes the improvement of students' abilities with respect to research and information fluency, problem solving skills, technology operations and concepts, and information and technological literacy.

Such support as described can only be provided to eligible entities, which are limited to either a local education agency that hosts a unit of the Junior Reserve Officers' Training Corps (JROTC), a school operated by Department of Defense Education Activity (DoDEA), or some combination of these two.

(6) STEM Scholarship Programs

The DoD may seek applications to fund scholarship programs that support rising scientists and engineers that will be the future of our Nation's STEM talent that meets unique defense mission and operational needs. These scholarship programs may support high school students, Two-Year Institutions/Community Colleges students, undergraduate students, graduate students, student veterans and their spouses pursuing STEM or STW careers in fields of high priority to the DoD, and/or researchers. Scholarship programs may include a service requirement associated with the award. Additionally, dedicated funding may be allocated for scholarships that support target groups in STEM education and workforce development (e.g., underrepresented and underserved populations¹⁸ or reskilling/upskilling of veterans). Any new scholarship program should complement existing DoD scholarship funding, rather than duplicate current programs.

(7) Strategic Partnerships

The DoD may seek to fund programs and initiatives that support strategic partnerships with awardees, collaborators, and stakeholders across academia, the defense industrial base, non-profit industries, the Federal Government, and others, in alignment with the DoD STEM and Federal STEM Education strategic vision and mission. These strategic partnerships may also be developed and fostered through STEM education ecosystems.¹⁹ Through engaging with and leveraging strategic

¹⁸ DoD STEM's definition of traditionally or historically underserved and underrepresented populations in STEM is in the Strategic Plan: https://dodstem-assets.dodstem.us/files/DoD_STEM_Strategic_Plan_2021.pdf

¹⁹ Federal definition for STEM education ecosystems: STEM education ecosystems consist of multi-sector partners united by a collective vision of supporting participation in STEM through the creation of accessible, inclusive

partnerships, the DoD aims to create more effective and efficient STEM education and workforce development interventions, and to amplify awareness of DoD STEM education and career opportunities. Benefits of collaborating through strategic partnerships and STEM education ecosystems includes, but are not limited to, common articulation of STEM workforce shortfalls, common approach to collecting metrics and evaluating programs, sharing of best practices, and communicating opportunities to engage students in pathways to defense careers.

(8) Program Evaluations and Assessments

Strategic goal 4.0 from the FY 2021-2025 DoD STEM Strategic Plan is to “advance the efficiency and effectiveness of STEM education and workforce development programs, activities, and outreach through evaluation and assessment.” In alignment with this strategic goal, in alignment with the Federal STEM Education strategic goal of operating with transparency and accountability, and to satisfy the requirements of the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Reauthorization Act of 2010, DoD STEM may seek to fund evaluation efforts that analyze the outcomes and impacts of DoD STEM education and outreach programming. As noted in DoD Instruction 1025.11, *DoD STEM Education Programs and Activities*, program evaluation results may be used to assess a program's effectiveness, identify how to improve performance, or guide resource allocation.²⁰ All evaluation efforts should complement and add to current evaluation efforts,²¹ both at the portfolio and individual program/Component level.

Evaluation efforts of interest may include, but are not limited to, near term outcomes (i.e., participant STEM competencies, such as STEM skills, knowledge, abilities, efficacy; and participant awareness of, and interest in, DoD STEM research and careers), mid- and long-term outcomes (i.e., sustained student pursuit and achievement of STEM and DoD STEM careers; and increased student pursuit of STEM coursework in secondary and post-secondary schooling), and/or system-level evaluations (i.e., assessments on the health, efficiency, and effectiveness of STEM education ecosystems).

(9) Data Analytics and Visualizations

STEM learning opportunities spanning all education stages and career pathways. A STEM education ecosystem continuously evaluates its activities and adapts as needed, plans for the long-term, and communicates its work to build broad support and advance best-practices. (2020 Progress Report on the Implementation of the Federal STEM Education Strategic Plan (archives.gov))

²⁰ <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/102511p.pdf?ver=2020-08-26-102256-227>

²¹ <https://dodstem.us/about/impact/>

The DoD may seek to fund data analytic and visualization efforts and initiatives. These efforts may increase effective monitoring and reporting on progress towards program objectives, provide resources that show the availability of STEM education and outreach programs and resources throughout the nation, and/or communicate and demonstrate the value of DoD STEM programs. Through data analytics and visualizations, DoD STEM internal and external stakeholders may gain a better understanding of the breadth, depth, and reach of collaborative efforts across the DoD STEM education and workforce development programs, and DoD STEM may be better positioned at the forefront of public dissemination efforts for program performance and outcome data.

(10) Activities Aligned to the DoD STEM Strategic Plan

The DoD may seek to fund activities aligned to DoD STEM's strategic vision and mission, and/or support any of the strategic goals. These strategic vision, mission, and goals are subject to change as the DoD STEM Strategic Plan is updated.

The vision and mission FY 2021-2025 DoD STEM Strategic Plan is below:

- DoD STEM Vision: A Diverse and sustainable STEM talent pool ready to serve our Nation and extend the DoD's competitive edge; and
- DoD STEM Mission: Inspire, cultivate, and develop exceptional STEM talent through a continuum of opportunities to enrich our current and future DoD workforce poised to tackle evolving defense technological challenges.

Corresponding strategic goals outlined in the FY 2021-2025 DoD STEM Strategic Plan are below:

1. Inspire community engagement in DoD STEM education programs and activities to provide meaningful STEM learning opportunities for students and educators.
2. Attract the Nation's and DoD's current and future STEM workforce through multiple pathways to educational and career opportunities.
3. Increase participation of underserved and underrepresented groups in STEM education and workforce development programs, activities, and outreach.
4. Advance the efficiency and effectiveness of STEM education and workforce development programs, activities, and outreach through evaluation and assessment.

(11) Other NDEP Congressional Initiatives and Programs

NDEP fosters and enhances the DoD's ability to develop and access high-quality STEM talent vital to national defense, now and in the future.

Aligned to the Federal STEM Education Strategic Plan, NDEP addresses critical STEM education and talent development challenges using a continuous learning structure and evidence-based approaches. Specifically, NDEP is part of the broader Department-wide effort under DoD STEM, which works collectively with partners from academia, industry, not-for-profit organizations, defense laboratories and engineering centers, and other government entities to: (1) build strong foundations for STEM literacy; (2) increase diversity, equity, and inclusion in STEM; and (3) prepare the STEM workforce of the future.

Additionally, the DoD may seek to fund additional NDEP congressional education initiatives, programs, and activities.

D. AUTHORIZATION

The authorization to make awards under this NFO may be found via Assistance Listing (formerly, the Catalog of Federal Domestic Assistance [CFDA] Number) 12.006 at <https://sam.gov/content/assistance-listings>.

E. LEGAL REQUIREMENTS

Each grant awarded under this announcement will be governed by the general terms and conditions in effect at the time of the award that conform to the DoD's implementation of OMB guidance applicable to financial assistance in 2 CFR 1100 [Subchapter D – Administrative Requirements Terms and Conditions for Cost-Type Grants and Cooperative Agreements to Nonprofit and Government Entities] which are located at <https://www.nre.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions>. These terms and conditions are incorporated by reference in this announcement.

F. PROGRAM-SPECIFIC REQUIREMENTS

Not applicable.

II. FEDERAL AWARD INFORMATION

The Department intends to award multiple grants in the Topics of Interest (Section I.C.) subject to the availability of funds.

The DoD expects projects to be completed within the performance period of the specified award. Any requests for no-cost extensions must be fully justified and submitted to the Grants Officer no later than 60 days before the end of the period of performance. Submission does not guarantee approval. Per 2 CFR 200.339, an award can be terminated for several reasons: failure to comply with terms and conditions of the award, for cause (meaning non-performance), by consent of the two parties; and the awardee can likewise initiate a termination.

III. ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS

Applicants are required to submit a white paper no later than the date specified in the NFO amendment or Industry Day/Opportunity Day announcement. White papers should follow the designated template (Section XII) and include a project summary, technical concept, rough order of magnitude cost, and relevance to topic(s) of interest (additional information on white paper content is outlined in Section IV.F.1.). The white paper should be emailed to osd.dodstem@mail.mil with the subject line, "NFO White Paper Submission." Applicants will be selected from the white paper submissions to be ***invited by the Government via email*** to submit a full technical application on Grants.gov for evaluation and possible award consideration.

Eligible applicants include: industry, non-profit institutions, institutions of higher education, state and/or local educational agencies, or consortia of such institutions and/or industry. Foreign entities will not be considered.

Current and past awardees from this initiative, or previous versions of this initiative, are eligible to submit white papers/applications under this NFO.

Defense laboratories, military universities, and warfare centers, as well as other DoD and civilian agency laboratories, are not eligible to receive awards under this NFO. If any such organization is interested in the program described herein, the organization may contact DoD STEM at osd.dodstem@mail.mil to discuss potential projects. The subject line of the email shall read "NDEP NFO Potential Project Inquiry."

Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this NFO. However, teaming arrangements between FFRDCs and eligible principal applicants are allowed so long as they are permitted under the sponsoring agreement between the Government and the specific FFRDC.

University Affiliated Research Centers (UARC) are eligible to submit white papers and applications under this NFO, unless precluded from doing so by their Department of Defense UARC contract.

Religious organizations are entitled to compete on equal footing with secular organizations for Federal financial assistance as described in Executive Order (EO) 13798, "Promoting Free Speech and Religious Liberty."

To prevent the bias and unfair competitive advantage resulting from conflicting rules, Applicants must identify in their application any organizational conflict of interests (OCI) which may exist. If an Applicant has an actual or potential OCI, their application must identify the OCI and the mitigation plan to address it using

ADAP Form 209.506-1. Silence on this topic in an application will be understood to mean there is no OCI with the Applicant.

B. COST SHARING OR MATCHING

The primary basis for selecting applications for award will be technical merit, relevance to the subject of the solicitation, proposed cost realism and reasonableness, and the availability of funds to support the effort. If offered, voluntary cost sharing may be considered as a demonstration of an offeror's commitment to their proposed project. Any proposed cost sharing becomes a binding term of any award. WHS/AD reserves the right to request and require additional supporting information and documentation after it makes the selection determination. WHS/AD reserves the right to remove Applicants from award consideration if the parties fail to reach agreement on award terms, conditions, or cost/price within a reasonable time; or if the Applicants fail to provide requested or required additional information in a timely manner.

C. CONFLICT OF INTEREST

(1) General Requirement for Disclosure

The Applicant, and any additional partners, must disclose any potential or actual scientific or nonscientific conflict of interest(s) to the Government. The applicant, and any partners, must also disclose any potential or actual conflict(s) of interest for any identified sub recipient included in the application. The Government or Grants Officer reserves the right to clarify any conflicts of interest, if needed.

At the Government and/or Grants Officer's discretion, the Government and/or Grants Officer may ask the Applicant and/or additional partners for a conflict of interest mitigation plan after submission of the application. The plan is subject to Government and/or Grants Officer approval.

(2) Scientific Conflict of Interest

Scientific collaborations on research and development projects are generally the result of close collaboration prior to the submission of applications for support. Accordingly, these collaborations should be considered when considering potential conflicts of interest. The potential conflict is mitigated by the disclosure of these collaborations, and the list of current and pending support the applicant provides for senior and key researchers. Therefore, the applicant must include in their list of current and pending support all collaborators, even if they did not formally provide support.

D. OTHER

The Applicant must include the Acknowledgment of Support and Disclaimer on all materials created or produced under our awards. This language may be found in the Terms and Conditions included in the award documents.

To apply for grants and other funding opportunities the applicant entity must have an active registration in the System for Award Management (SAM). Applications will not be accepted through Grants.gov or other methods unless the entity is registered in SAM. Registration in SAM now includes the acceptance of Certifications and Assurances. SAM may be accessed at: <https://www.sam.gov>. See <https://www.grants.gov/web/grants/grantors/grantor-standard-language.html> and “Attachment A - Registration and Submission Instructions” for details on how to register in SAM, and Grants.gov.

The Federal Assistance Certifications Report is an attestation that the entity will abide by the requirements of the various laws and regulations; therefore, as applicable, the applicant is still required to submit any documentation, including the SF-LLL Disclosure of Lobbying Activities (if applicable), and, if applicable, informing the DoD of unpaid delinquent tax liability or a felony conviction under any Federal law.

For more information, see “Attachment C: Certifications and Representations.”

IV. APPLICATION AND SUBMISSION INFORMATION

A. SUBMISSION DATE AND TIME

The DoD will only accept applications submitted on or before the date specified in the NFO amendment or Industry Day/Opportunity Day announcement. Read the instructions in <https://www.grants.gov/web/grants/grantors/grantor-standard-language.html> about registering to apply for DoD funds. If the applicant experiences difficulties with their submission, Grants.gov provides support via the toll-free number 1-800-518-4726 and email at support@grants.gov. This ticket number will allow the DoD to verify the issue if it cannot be resolved by the application date.

Applicants are required to submit a white paper no later than the date specified in the NFO amendment or Industry Day/Opportunity Day announcement. The white paper should be emailed to osd.dodstem@mail.mil with the subject line, “NFO White Paper Submission.” Applicants will be selected from the white paper submissions to be invited by the Government via email to submit a full technical application on Grants.gov for evaluation and possible award consideration.

B. ADDRESS TO REQUEST APPLICATION PACKAGE

The application package for this NFO is available on Grants.gov. Amendments to this NFO will be posted to the above website when they occur. Interested parties are encouraged to periodically check the above website for updates and amendments.

C. APPLICATION PROCEDURES AND REQUIREMENTS

This NFO competition is implemented in two stages:

- (1) Applicants must submit a white paper by the designated deadline specified in the NFO amendment or Industry Day/Opportunity Day announcement.
- (2) Based on assessment of the white paper, selected applicants will be invited to submit an application by the designated deadline.

The Government only seeks white papers that are relevant and responsive to the Topics of Interest in Section I.C. Applicants **MUST** submit a separate white paper for each NFO award consideration. Applications that fail to address the areas listed in the Topics of Interest will be rejected and not considered further.

As mentioned prior, white papers are a **MANDATORY** component of a two-part submission process. White papers must **NOT** be submitted through Grants.gov. Instead, white papers are to be submitted via email to DoD STEM at osd.dodstem@mail.mil as a PDF file. The subject line of the email shall read “NFO White Paper Submission.” There is an email size limit of 5 MB per email. Only email submissions will be accepted and reviewed.

DO NOT SEND: Hardcopies (including facsimiles)

DO NOT SEND: ZIP files

DO NOT SEND: Password protected files.

White papers received after the due date and time specified in the NFO amendment or Industry Day/Opportunity Day announcement will not be considered under any circumstance. Time of receipt will be determined by the date and time the email is received in the DoD STEM email inbox. Some submitters have experienced significant transmission delays when submitting white papers. Early submission is encouraged. Submitters may request verification of receipt.

Applications will only be accepted if submitted through Grants.gov. Organizations must have a Unique Entity Identifier (UEI), active System for Award Management (SAM) registration, and Grants.gov account to apply for grants. Please see “Attachment A - Registration and Submission Instructions” for details on how to go through this process.

Full application packages must be submitted electronically to Grants.gov no later than the date specified in the NFO amendment or Industry Day/Opportunity Day announcement.

Applicants are responsible for submitting their applications in sufficient time to allow them to reach Grants.gov by the date and time specified in this announcement. It is strongly recommended that applications be uploaded at least

two days before the closing date and time. This will help avoid problems caused by high system usage or any potential technical and/or input problems involving the applicant's own equipment. It will also allow any application errors detected by Grants.gov to be corrected in time for the application to be resubmitted. If the application is received by Grants.gov after the exact time and date specified as the deadline for receipt, it will be considered "late" and may not be considered for review.

Acceptable evidence to establish the time of receipt by Grants.gov includes documentary evidence of receipt maintained by Grants.gov, and Grants.gov e-mails to the applicant confirming receipt. These e-mails will indicate 1) the application was received on time, 2) application was rejected due to errors, 3) application was received after the deadline. Note that this Grants.gov response may occur over several e-mails, e.g., one acknowledging on-time receipt, and a later e-mail rejecting for errors the system detected. Applicants can also track the status of their applications at <https://www.grants.gov/web/grants/applicants/track-my-application.html>.

D. APPLICATION WITHDRAWAL

An applicant may withdraw an application at any time before award by written notice or by email. Notice of withdrawal shall be sent to the grants officer identified in this announcement. Withdrawals are effective upon receipt of notice by the grants officer.

E. INTERGOVERNMENTAL REVIEW

Not applicable.

F. CONTENT AND FORM OF WHITE PAPER AND APPLICATION SUBMISSIONS

See <https://www.grants.gov/web/grants/grantors/grantor-standard-language.html> for information on how to complete the application using Workspace on Grants.gov.

Proposals will be evaluated by Government personnel and/or Non-Government reviewers. Non-Government reviewers may include university faculty and staff researchers. Each reviewer is required to sign a conflict-of-interest and confidentiality statement attesting that the reviewer has no known conflicts of interest, and that application and evaluation information will not be disclosed outside the evaluation panel. The names and affiliations of reviewers are not disclosed. All submissions will be protected from unauthorized disclosure in accordance with applicable law and DoD regulations. Applicants are expected to appropriately mark each page of their submission that contains proprietary information.

Common formatting requirements across all submitted documents:

- Font: 12 point, Times New Roman
- Margins: 1 inch on all sides

- Paper size: 8 ½ by 11 inches
- Titles given to white papers and full applications should be descriptive of the proposed work and should not be merely a copy of the title of this announcement.
- Documentation submitted under this NFO are expected to be unclassified; classified applications are not permitted.
- All documents must be submitted in PDF format.
- Preapplications and proposals will be evaluated by Government personnel and/or Non-Government reviewers. Non-Government reviewers may include university faculty and staff researchers. Each reviewer is required to sign a conflict-of-interest and confidentiality statement attesting that the reviewer has no known conflicts of interest, and that application and evaluation information will not be disclosed outside the evaluation panel. The names and affiliations of reviewers are not disclosed.
- All submissions will be protected from unauthorized disclosure in accordance with applicable law and DoD regulations. The applicant is expected to appropriately mark each page of their submission that contains proprietary information.
- Curriculum Vitae (CV) is required for both white paper and full application submissions (two (2) page limit, single-sided per applicant). The CV should include relevant experience, publications, and funding received in the area of interest, and any previous involvement and experiences with the DoD. List all previous DoD funding including project titles within the last eight years.

(1) White Papers

- The due date for receipt of white papers will be specified in the NFO amendment or Industry Day/Opportunity Day announcement. White papers received after the published deadline will not be considered under any circumstance. Early submission of white papers is welcomed and encouraged. White papers should follow the designated template in Section XII of this NFO.
- Sections required:
 - Cover page (1 page maximum): The Cover Page shall be labeled “White Paper,” and shall include the Funding Opportunity Number, project title, applicant’s institution, technical and administrative Points of Contact (POCs), proposed title, Topic of Interest(s) addressed (as specified in the NFO amendment or Industry Day/Opportunity Day announcement), and estimated total cost of the project.
 - Summary (1 page maximum): A summary of the proposed effort. Proposed public benefit must be expressly addressed.
 - Technical Concept (3 page maximum): A description of the proposed effort and how it advances the DoD STEM mission. The project idea, technical rationale, and approach must identify a problem(s), arguments to substantiate the claims made, and

proposed approach to address the issue. The Applicant's capacities must be discussed as they relate to achieving success in the project, to include effective program evaluation and sustainability plans. The project must address the Topic of Interest stated in Section I.C. and provide answers to the following:

- What does the proposed work aim to accomplish or do? If applicable, how are these goals related to and advancing any current outcomes of existing programs?
 - What is the approach to meeting those goals?
 - What will the impact be if the work is successful?
 - Discuss how the effort will be evaluated, including what metrics will be collected and evaluation method(s) used.
- Relevance to Topic(s) of Interest specified in the NFO amendment or Industry Day/Opportunity Day (1 page maximum): A description of relevance to Topic(s) of Interest. How does it meet the goals of the Topic of Interest, as outlined in the NFO Amendment or Industry Day/Opportunity Day?
 - Rough Order of Magnitude Cost (1 page maximum): White papers shall include a rough order of magnitude cost showing requested funding per year and total cost, and which suggests spending priorities to satisfy Section I.C. This includes, but is not limited to, a rough explanation of anticipated costs including indirect, direct, administrative, overhead, labor, travel, and sub-contracting costs. Also describe a strategy for program sustainability, such that following the completion of DoD STEM's investment under this funding opportunity, the effort will have a clear financial path and leave enduring organization capability.
 - CV and References (2 page maximum for each CV): The CV of the lead PI, as well as any accompanying references, should be included at the end of the document.

The white paper should be emailed to osd.dodstem@mail.mil with the subject line, "NFO White Paper Submission." Applicants will be selected from the white paper submissions to be ***invited by the Government via email*** to submit a full technical application on Grants.gov for evaluation and possible award consideration.

(2) Full Applications

Applicants must complete the mandatory forms and any optional forms in accordance with the instructions on the forms and the additional instructions below. The required fields should be completed in accordance with the "pop-up" instructions on the forms. To activate the instructions, turn on the "Help Mode" (icon with the pointer and question mark at the top of the form). Files that are attached to the forms must be in Adobe Portable Document Form (PDF), except for the Initial Work Plan, and

unless otherwise specified in this announcement. The applicant must mark their application with the announcement number. A summary of what is required for a complete application is below.

Attachments to Required forms (See Attachment B for detailed instructions on filling out the SF-424 Forms for DoD grants)

The chart below specifies which forms and attachments required and specifies the maximum page lengths for attachments to be submitted along with the completed form.

Form	Associated Field	Attachment	Attachment Maximum Length (<i>Suggested</i>)
SF 424 (R&R) Application for Federal Assistance, including an authorized signature	17	SFLL Disclosure of Lobbying Activities	As Required
	18	Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements	As Required
R&R Other Project Information Form	7	Project Summary/Abstract	1 Page
	8	Project Narrative*	3 Pages
	9	Bibliography & References Cited	As Required
	11	Equipment	-
R&R Senior/Key Person Profile Expanded	Bio Sketch	Biographical Sketch	1-2 Pages
	Current & Pending Support	Current & Pending Support	No page restriction**
R&R Budget Form	L – Budget Justification	Budget Justification	As Required***
R&R Project/Performance Site Locations Form	Additional Locations	Additional Locations	As Required (not applicable if there are no additional locations)
R&R Personal Data (Optional)	N/A (No attachments)	N/A (No attachments)	N/A (No attachments)

* The Project Narrative is broken out as follows and explained below. These requirements are subject to change, dependent on the NFO Amendment or Industry Day/Opportunity Day. Additional description of what is to be included in the Project Narrative and corresponding page limits will be outlined in the NFO Amendment or Industry Day/Opportunity Day.

- Cover Page
- Table of Contents
- Technical Approach and Justification
- Management Approach
- Metrics and Evaluation
- Project Schedule and Milestones
- Financial Breakdown
- Reports
- Qualifications
- Responsibility
- Facilities & Equipment
- Initial Work Plan

EXCLUDED from the Project Narrative page limit are: resumes, curricula vitae (limited to two pages each), references, letters of support, current and pending projects, and data management plan. These may be included in the same document as appendices, after the page limit.

Technical Applications exceeding the page limit may not be evaluated.

**** Current and Pending Support (required; no page restrictions; not counted in the project scope restrictions):**

- A list of all current projects the individual is working on, in addition to any future support the individual has applied to receive, regardless of the source.
- Title and objectives of the other research projects.
- The percentage per year to be devoted to the other projects.
- The total amount of support the individual is receiving in connection to each of the other research projects or will receive if other applications are awarded.
- Name and address of the agencies and/or other parties supporting the other research projects.
- Period of performance for the other research projects.

***** Submit Budget Justification using the following format:**

- Paper Size – 8.5 x 11-inch paper
- Margins – 1 inch
- Spacing – single spaced
- Font – Times New Roman, 12 point
- Page limit – There is no page limitation to the Budget

The electronic file name for all documents submitted under this NFO must not exceed 68 characters in length, including the file name extension.

(3) Project Narrative Content

A complete application must include **all** components in the following section which will be the criteria for how the application will be evaluated (Section V). The application must describe the effort by the following:

Cover Page – This must include the words “Grant Application” or “Cooperative Agreement Application”, as applicable. Using the format below, the following information must be included:

1. Funding Opportunity Number: HQ003423NFOEASD01;
2. Title of Application;
3. Identity of Lead Organization and complete list of sub-awardees / Consortium Members;
4. Technical contact (name, address, phone/fax, electronic mail address);
5. Administrative/business contact (name, address, phone/fax, electronic mail address);
6. Principle Investigator (name, address, phone/fax, electronic mail address);
7. Proposed period of performance (identify both the base period and any options, if included); and
8. Total proposed budget.

Table of Contents – A listing of the sections within the application, including corresponding page numbers.

Technical Approach and Justification – The application must consist of a clear description of the approach being proposed. The potential DoD STEM relevance and the focus and impact on the Topic(s) of Interest (Section I.C) must be clearly identified and explained. The application should expound on the technical concept and in particular:

1. Discuss scientific and technical merits of the application;
2. Discuss the potential to achieve the objectives of the program, including the extent to which the proposed effort would enhance current capabilities;
3. Identify proposed efforts for increasing or maintaining the educational pathway and the potential of the proposed program to educate future scientist and engineers in STEM disciplines critical to the DoD mission;
4. Discuss increased or enhanced opportunities to disseminate information on DoD STEM programs and careers;

5. Discuss the potential and extent to which the proposed program could potentially engage the DoD Research and Engineering enterprise into the planned activities of the program; and
6. Describe a strategy for program sustainability, such that following the completion of NDEP's award under this funding opportunity, the effort will have a clear financial path for scalability or program sustainment, and leave enduring organization capability.

Management Approach – Describe the overall management approach and provide rationale for participation of key team members. Describe the planned relationships with any sub- awardees or collaborators. Clear responsibilities for each partner should be outlined, and a mechanism for collaboration between partners should be clearly explained. Discuss how the program and budget will be executed according to schedule, and how the awardee will monitor the progress of program and budget execution.

Metrics and Evaluation – Discuss how the program will be evaluated, specifically what metrics will be collected and evaluation method(s) used. Metrics and evaluation components must include but not be limited to: Logic models or learning agenda, and program operating guidelines. Anticipated data collection and results. Data instruments as feasible.

Project Schedule and Milestones – A summary of the schedule of events and milestones.

Financial Breakdown – The application must include a cost proposal detailing direct labor, administrative and clerical labor, fringe benefits and indirect costs, travel, sub-awards, subcontracts, consultants, materials and supplies, recipient acquired equipment of facilities, and other direct costs.

The cost proposal, which is a *narrative* explaining and justifying budget figures in enough detail so the government can determine reasonableness. It must include *all figures, calculations, and supporting documentation for determining cost allowability, allocability, and reasonableness*. Justifications for costs must be explicitly stated.

Additional information may be requested, if needed. If composite rates are used, provide the calculations used in deriving the composite rates. A Negotiated Indirect Cost Rate Agreement (NICRA) may be required in order for an awardee to invoice for indirect costs. If the Offeror does not currently hold a NICRA, describe the current status of the organization's request for such an agreement with its cognizant agency.

IAW 2 CFR §200.414(f), any non-Federal entity that has never received a negotiated indirect cost rate, except for those non-Federal entities

described in Appendix VII to 2 CFR §200, may elect to charge a de minimis rate of 10% of modified total direct costs (MTDC) which may be used indefinitely.

If subject to Federal Single Audit coverage requirements, the offeror must submit the latest Single Audit with the application.

NOTE: *Failure to adequately provide detailed cost data will require the Grants Officer to contact the proposing organization for the requisite information. All Offerors are required to submit a thoroughly detailed cost breakdown. The Grants Officer **must** be able to determine that all proposed costs are allowable and reasonable. A detailed budget will facilitate this cost analysis.*

Reports – The Applicant must acknowledge that the following reports (more information can be found in Section VII) are required under a DoD funded STEM effort:

1. Monthly Reports
 - Monthly Financial Reports
2. Quarterly Reports
 - Interim Research Performance Progress Reports (RPPR)
 - Interim Federal Financial Report (SF 425)
 - Federal Financial Report (SF 425)
3. Annual Reports
 - Annual Research Performance Progress Report (RPPR)
 - Invention Reports
 - Annual DoD STEM Program Data Call Form
4. Final Reports
 - Final Report
 - Final Federal Financial Report (SF 425)
 - Invention Report

Grants do not include the delivery of software, prototypes, and other hardware deliverables.

Letter(s) of Support – There is no specified format or content required for the letter(s) of support other than being authored by the appropriate representative and supporting commitment to the applicant and his or her project. Commitment may include (but is not limited to) funding, related materials and/or computer investments, technical advisement, and organizational or infrastructure support. The letter(s) can include any and all commitments and investments made by the representative towards the applicant and the overall statement about the relevance of the project to DoD STEM goals. Letters of support are required for submission of Technical Application.

References – Literature citations.

Current and Pending Project and Application Submissions –

Applicants are required to provide information on all current and pending support for ongoing projects and applications, including subsequent funding in the case of continuing contracts, grants, and other assistance agreements. Concurrent submission of an application to other organizations will not prejudice its review by the DoD. Applicants shall provide the following information of any related or complementary application submissions from whatever sources (e.g., DoD, Federal, State, local or foreign government agencies, public or private foundations, industrial or other commercial organizations):

1. Title of Application and Summary;
2. Source and amount of funding (annual direct costs; provide contract and/or grant numbers for current contracts/grants);
3. Percentage effort devoted to each project;
4. Identity of prime Applicants and complete list of sub-awards, if applicable;
5. Technical contact (name, address, phone/fax, electronic mail address);
6. Administrative/business contact (name, address, phone/fax, electronic mail address);
7. Period of performance;
8. The proposed project and all other projects or activities requiring a portion of time of the Project Director/Principal Investigator and other senior personnel must be included, even if they receive no salary support from the project(s);
9. The total award amount for the entire award period covered (including indirect costs) must be shown as well as the number of person-months or labor hours per year to be devoted to the project, regardless of source of support; and
10. State how projects are related to the proposed effort and indicate degree of overlap.

Principal Investigator Qualifications – A discussion of the qualifications of the proposed Project Director/Principal Investigator and any other key personnel. Include resumes or curricula vitae for the Project Director/Principal Investigator and other key personnel. The resumes/curricula vitae shall be attached to the application, and must be limited to two (2) pages each.

For all personnel proposed as key personnel applicants must submit an SF424 Research and Related (R&R) 4040-001 Senior/Key Person Profile (Expanded) form.

Responsibility – Applicants must provide the following information to the DoD in order to assist in the DoD’s evaluation of the applicant’s responsibility:

1. Describe how you have adequate resources or the ability to obtain such capability as required to complete the activities proposed;
2. Describe how you have the ability to comply with the grant conditions, taking into account all existing and currently prospective commitments of the applicant, nongovernmental and governmental;
3. Describe your performance history; specifically, your record in managing Federal awards and the extent to which any previously awarded amounts will be expended prior to future awards;
4. Describe your record of integrity and business ethics;
5. Describe qualifications and eligibility to receive an award under applicable laws and regulations; and
6. Describe your organization, experience, accounting, and operational controls and technical skills, or the ability to obtain them (including as appropriate such elements as property control systems, quality assurance measures, and safety programs applicable to the services to be performed).

Facilities & Equipment – Describe facilities available for performing the proposed effort and any additional facilities or equipment the organization proposes to acquire at its own expense. Indicate government-owned facilities or equipment already possessed that will be used. Justify the need for each equipment item. (Additional facilities and equipment will not be provided unless the proposed effort cannot be completed by any other practical means.)

Initial Work Plan – Applicants must submit an Initial Work Plan following the format in Section XI of this NFO. The Work Plan will become part of the resulting award if the application is selected to be funded. Please fill in the information for the blank portions and include all of the verbiage from these sections: Acknowledgement of Support, Review for Sensitive Information, Copies for USD(R&E), and Reporting Requirements. A completed Work Plan is required for selected application to receive funding.

R&R Form: Research & Related Budget – The applicant must use the Grants.gov forms from the application package template associated with the NFO on the Grants.gov web site located at <https://www.grants.gov/>. If options are proposed, the budget must provide the pricing information for the option periods; failure to include the proposed costs for the option periods will result in the options not being included in the award.

Budget Justification – A separate Adobe.pdf document should be included in the application that provides appropriate justification and/or supporting documentation for each element of cost proposed. This document shall be attached under Section K. “Budget Justification” of the Research and Related Budget form. Click “Add Attachment” to attach.

The itemized budget should include the following:

1. Direct Labor – Individual labor categories or persons, with associated labor hours and unburdened direct labor rates. Provide escalation rates for out years.
 - a. Administrative and Clerical Labor – Salaries of administrative and clerical staff are normally indirect costs (and included in an indirect cost rate). Direct charging of these costs may be appropriate when a major project requires an extensive amount of administrative or clerical support significantly greater than normal and routine levels of support. Budgets proposing direct charging of administrative or clerical salaries must be supported with a budget justification which adequately describes the major project and the administrative and/or clerical work to be performed.
 - b. Fringe Benefits and Indirect Costs (F&A, Overhead, G&A, etc.) – The application should show the rates and calculation of the costs for each rate category. If the rates have been approved/negotiated by a Government agency, provide a copy of the memorandum/agreement. If the rates have not been approved/negotiated, provide sufficient detail to enable a determination of allowability, allocability and reasonableness of the allocation bases, and how the rates are calculated. Additional information may be requested, if needed. If composite rates are used, provide the calculations used in deriving the composite rates.
 - c. Travel – The proposed travel costs must include the following for each trip: the purpose of the trip, origin and destination if known, approximate duration, the number of travelers, and the estimated cost per trip must be justified based on the organizations historical average cost per trip or other reasonable basis for estimation. Such estimates and the resultant costs claimed must conform to the applicable Federal cost principals.
 - d. Sub-awards/Subcontracts – Provide a description of the work to be performed by the subrecipient/subcontractor. For each sub-award, a detailed budget is required to be submitted by the subrecipient(s). An application and any supporting documentation must be received and reviewed before the Government can complete its cost analysis of the application. The DoD’s preferred method of receiving subcontract information is for this information to be

included with the Prime's application. The email should identify the application title, the prime Applicant and that the attached application is a subcontract.

2. Consultants – Provide a breakdown of the consultant's hours, the hourly rate proposed, any other proposed consultant costs, a copy of the signed Consulting Agreement or other documentation supporting the proposed consultant rate/cost, and a copy of the consultant's proposed statement of work if it is not already separately identified in the prime contractor's application.
3. Materials & Supplies – Provide an itemized list of all proposed materials and supplies including quantities, unit prices, and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
4. Recipient Acquired Equipment or Facilities – Equipment and/or facilities are normally furnished by the Recipient. If acquisition of equipment and/or facilities is proposed, a justification for the purchase of the items must be provided. Provide an itemized list of all equipment and/or facilities costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). Allowable items normally are limited to research equipment not already available for the project. General purpose equipment (i.e., equipment not used exclusively for research, scientific or other technical activities, such as personal computers, laptops, office equipment) should not be requested unless they will be used primarily or exclusively for the project. For computer/laptop purchases and other general purpose equipment, if proposed, include a statement indicating how each item of equipment will be integrated into the program or used as an integral part of the research effort.
5. Other Direct Costs – Provide an itemized list of all other proposed other direct costs such as Graduate Assistant tuition, laboratory fees, report and publication costs, and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
6. Fee/Profit – Fee/profit is unallowable under assistance agreements at either the prime or sub-award level but may be permitted on subcontracts issued by the prime awardee.

Data Management Plan – The Data Management Plan will describe the data that is collected through the course of the proposed research and information on how the data will be shared, organized, and, preserved. In instances where this is not possible, The Data Management Plan must explain why it is not possible or scientifically appropriate. The Data Management Plan should not exceed two pages and included under the

generic “Other Attachments”. Information on the Data Management Plan can be found in DoDI 3200.12, Section 3.c. of Enclosure 3.

(<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/320012p.pdf?ver=2019-04-30-073122-220>).

- (4) Additional Information Required After Selection but Prior to Award
Even if selected, awards are not final until these documents are received and approved:
- Evidence of compliance with DoD Instruction 3216.02, “Protection of Human Subjects and Adherence to Ethical Standards in DoD-Conducted and -Supported Research”

G. FUNDING RESTRICTIONS

Per 2 CFR § 200.216, funds may not be used to procure telecommunications equipment or video surveillance services or equipment produced by

- Huawei Technologies Company
- ZTE Corporation Hytera Communications Corporation
- Hangzhou Hikvision Digital Technology Company
- Dahua Technology Company
- Any subsidiary or affiliate of such entities

Resultant grants will not allow reimbursement of pre-Federal award costs. The DoD will only fund salary, fringe benefits and indirect costs on awards under the announcement. Funds from an award may not be used to attain fee or profit.

V. APPLICATION REVIEW INFORMATION

A. SELECTION CRITERIA

All information necessary for the review and evaluation of an application must be contained in the application itself. No other material will be provided to the panel. Applications should contain sufficient technical detail to allow for in-depth technical assessment.

An initial review of the applications will be conducted to ensure compliance with the requirements of this NFO. Failure to comply with the requirements of the NFO may result in an application receiving no further consideration for award.

Awards under this NFO will be made to Applicants on the basis of the evaluation criteria listed in the NFO Amendment or Industry Day/Opportunity Day. Per the Department of Defense Grant and Agreement Regulations (DoDGARs), all competitive research and development awards must use, at a minimum, the following principal selection criteria:

- Technical merits of the proposed research and development.
- Potential relationship of the proposed research and development to Department of Defense missions.

If offered, voluntary cost sharing may be considered as a demonstration of an offeror's commitment to their proposed project. Any proposed cost sharing becomes a binding term of any award. WHS/AD reserves the right to request and require additional supporting information and documentation after it makes the selection determination.

WHS/AD reserves the right to remove Applicants from award consideration if the parties fail to reach agreement on award terms, conditions, or cost/price within a reasonable time; or if the Applicants fail to provide requested or required additional information in a timely manner.

B. REVIEW AND SELECTION PROCESS

Each application will be reviewed based on the selection criteria rather than against other applications submitted under this Announcement.

Applicants are advised that employees of commercial firms under contract to the government may be used to administratively process applications. By submitting an application, an applicant consents to allowing access to its application(s) by support contractors. These support contracts include nondisclosure agreements prohibiting their contractor employees from disclosing any information submitted by applicants.

In addition to the technical/program review, the DoD does a budget review and a risk review as directed by 2 CFR 200.206, including a review of the Federal Awardee Performance and Integrity Information System (FAPIIS). Applicants may review information in FAPIIS and comment on any information entered into that system. Comments made by applicants will be taken into account in addition to other information in considering applicants' integrity, business ethics, and record of performance.

At the time of application, there is no additional material to be submitted for this review. However, there may be additional requests for clarification as these reviews progress.

Options: The Government will evaluate options for award purposes by adding the total cost for all options to the total cost for the basic requirement. Evaluation of options will not obligate the Government to exercise the options during grant performance. The Government may elect to divide any resulting grant award into option periods or may elect to combine proposed option periods at the discretion of the Government.

Evaluation Panel: Technical details and budgets submitted under this NFO will be protected from unauthorized disclosure. The cognizant Program Officer and other Government subject matter experts will perform the evaluation of technical applications. Restrictive notices notwithstanding, one or more support contractors may be utilized as subject matter expert technical consultants. Each support

contractor employee that has access to technical and cost applications submitted in response to this NFO will be required to sign a nondisclosure statement prior to receipt of any application submissions.

Note that collaborative applications will be evaluated and selected for funding based on the strength of both applications in combination. As such, the most highly rated collaborative applications will illustrate the vital nature of the collaboration and its likelihood to contribute to more novel and potentially impactful work than could be achieved by a single investigator.

C. ANTICIPATED ANNOUNCEMENT AND FEDERAL AWARD DATES

Decisions are expected to be announced via email. All awards are expected to be in place by 8 February 2028.

VI. FEDERAL AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

The Applicant whose application is recommended for award may be contacted by a Grants Officer or his/her representative.

The notification e-mail regarding a selection is not authorization to commit or expend DoD funds. A DoD grants officer is the only person authorized to obligate and approve the use of Federal funds. This authorization is in the form of a signed Notice of Award. Applicants whose applications are recommended will be contacted by a DoD grants officer to discuss any additional information required for award. This may include representations and certifications, revised budgets or budget explanations, or other information as applicable to the proposed award. The award start date will be determined at this time.

Applicants who did not receive an award are not entitled to a de-brief.

WHS/AD award/modification documents are only available via the DoD Electronic Document Access System (EDA) within the Wide Area WorkFlow e-Business Suite (<https://wawf.eb.mil/>). EDA is a Web-based system that provides secure online access, storage and retrieval of awards and modifications to DoD employees and vendors.

If you do not currently have access to EDA, you may complete a self-registration request as a “Vendor” via <https://wawf.eb.mil/> following the steps below:

1. Click “Accept”
2. Click “Register” (top right)
3. Click “Agree”
4. In the “What type of user are you?” drop down, select “Vendor”
5. Select the systems you would like to access (iRAPT at a minimum)
6. Complete the User Profile and follow the site instructions

Allow five business days for your registration to be processed. EDA will notify you by email when your account is approved.

To access awards after your registration has been approved, log into <https://wawf.eb.mil/>, select “EDA”, select either EDA location, Select “Contracts”, select your search preference, enter the Contract Number (or, if applicable, enter the Grant Number in the Contract Number field), and select “View”.

Registration questions may be directed to the EDA help desk toll free at 866-618-5988, commercial at 801-605-7095, or via email at

disa.ogden.esd.mbx.cscassig@mail.mil (Subject: EDA Assistance).

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

- (1) Each award under this announcement will be governed by the general award terms and conditions in effect at the time of the award that conform to the DoD’s implementation of OMB guidance applicable to financial assistance in 2 CFR part 200, “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.” The DoD Research and Development General Terms and Conditions (latest version, January 2023) are located at <https://www.nre.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions>.

These terms and conditions are incorporated by reference in this announcement.

- (2) The applicant must comply with all applicable national policy requirements. The key national policy requirements that may relate to an award under this NFO are included in the terms and conditions specified in <https://www.nre.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions>.

By electronically signing the SF-424, the applicant affirms its agreement with the following certification.

Certification Required for Grant and Cooperative Agreement Awards

The certification at Appendix A to 32 CFR Part 28 regarding lobbying is the only certification required at the time of application submission for a grant or cooperative agreement award. The certification is as follows:

“By signing and submitting an application that may result in the award of a grant exceeding \$100,000, the prospective awardee is certifying, 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 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 employ 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 of Lobbying Activities" in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, and loans, or 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 section 1352, Title 31, U.S. Code. Any person who fails the required certification shall be subject to a civil penalty or not less than \$10,000.00 and not more than \$100,000.00 for each failure."

C. APPROPRIATIONS PROVISIONS ON TAX DELINQUENCY AND FELONY CONVICTIONS

Check either "is" or "is not" for each of these two representations, as appropriate for the proposing institution, include the AOR signature and point of contact information, and attach the representation page to Field 12 of the SF-424 Research & Related Other Project Information form. The page for these representations is provided with the application materials that are available for download at Grants.gov.

Representations

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:

(1) The applicant represents that it is () or 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.

(2) 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.

OMB CONTROL NUMBER: 0704-0494

OMB EXPIRATION DATE: 11/30/2019

AGENCY DISCLOSURE NOTICE

The public reporting burden for this collection of information is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Washington Headquarters Services, Executive Services Directorate, Directives Division, 4800 Mark Center Drive, East Tower, Suite 02G09, Alexandria, VA 22350-3100 [0704-0494]. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

D. PROHIBITION ON CONTRACTING WITH ENTITIES THAT REQUIRE CERTAIN INTERNAL CONFIDENTIALITY AGREEMENTS

Agreement with the representation below will be affirmed by checking the "I agree" box in block 17 of the SF-424 (R&R) as part of the electronic application submitted via Grants.gov. The representation reads as follows:

By submission of its 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: (1) the basis for this representation is a prohibition in Section 743 of the Financial Services and General Government Appropriations Act, 2015, Pub. L. 113- 235) on provision of funds through grants and cooperative agreements to entities with certain internal confidentiality agreements or statements; and (2) 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.

VII. REPORTING REQUIREMENTS

The terms and conditions of the award will provide the specifics on how to submit the reports and any required sections for those reports.

REPORT	REQUIREMENTS/FORM	FREQUENCY	MEANS OF SUBMISSION
Annual Research Performance Program Report (RPPR)	Template from DoD STEM	Annually	Email
Invention Reports	DD Form 882	Annually	Email
DoD STEM Program Data Call Form	Portal	Annually	Portal
Interim Federal Financial Report	SF-425	Quarterly	Email
Payment Report	Template from DoD STEM	Monthly	E-mail
Interim RPPR	Template from DoD STEM	Quarterly	Email
Closeout Report		Once	Email
Civil, criminal, or administrative proceedings in connection with award	2 CFR Appendix XII to Part 200	As applicable	Via SAM.gov
Eligibility, conviction, or indictment of principal	2 CFR 180.335 and 2 CFR 180.350	As applicable, including before entering into agreement	Email

Awardees will need to comply with the reporting requirements in 2 CFR 170: Reporting Subaward and Executive Compensation Information.

The terms and conditions of the award will provide the specifics on how to submit the reports and any required sections for those reports. Report details are outlined below:

A. MONTHLY REPORTS

- (1) **Monthly Financial Reports:** The Government will provide a template to each starting grant. This report will include information on current expenses and invoices for the time period. This report will be submitted 30 days after the reporting period ends.

B. QUARTERLY REPORTS

- (1) Interim Research Performance Progress Reports (RPPR): The Recipient shall provide Interim RPPR to the Government Sponsor and the Government Technical Representative, no later than 30 calendar days after the close of each quarter period. – The Government will provide a template to each starting grant. These reports shall detail the period's research activities, intermediate results, progress toward goals and other specific information and any issues that may impact completion of the planned work on schedule. If findings or discoveries are made that the Recipient feels are of sufficient importance that they would mitigate or impact program operations, USD(R&E) should be notified immediately. This report will be submitted for three quarters and an annual report (see below) for the fourth quarter.
- (2) Federal Financial Report (SF 425): SF425 is required within 30 calendar days after the end of reported quarter period: 3/31, 6/30, 9/30, and 12/31 and must include in the remarks the location of financial records and a point of contact for the Government to obtain access to the financial records associated with this Grant. SF425 is required if receiving advance payments. The Recipient shall provide forecasts of Federal cash requirements in the "Remarks" section of the report.

C. ANNUAL REPORTS

- (1) Annual Research Performance Progress Report (RPPR): The Recipient shall provide an Annual RPPR to the Government Sponsor and the Government Technical Representative, to be submitted annually from the date the grant was awarded. The Government will provide a template to each starting grant. A complete annual Performance Progress Report is mandated by the DoD. This reports shall detail the period's research activities, intermediate results, progress toward goals and other specific information and any issues that may impact completion of the planned work on schedule. If findings or discoveries are made that the Recipient feels are of sufficient importance that they would mitigate or impact program operations, USD(R&E) should be notified immediately.
- (2) Invention Reports: Submit interim DD882 at least annually, within 60 calendar days of the grant anniversary. Negative reports required.
- (3) Annual DoD STEM Program Data Call Form: The Government will provide a manual and template to each starting grant. These forms will include information about the organization and program specifics (overview, metrics, budget information, accomplishments, etc.).

D. FINAL REPORTS

- (1) Closeout Report: Detail the full programmatic accomplishments summarized from prior reports and a forecast for ongoing program sustainability and contribution to DoD STEM workforce needs as the funding ends. Include, as feasible, examples of educational materials produced, success stories, accomplishments, links to digital materials, and other resultant material from the award.
- (2) Final Federal Financial Report (SF 425): SF425 is required within 90 calendar days of the completion date for the term of this Grant and must include in the remarks the location of financial records and a point of contact for the Government to obtain access to the financial records associated with this Grant.
- (3) Invention Report: Submit final DD882 within 90 calendar days after the expiration of the grant. Negative reports required.

E. PROPERTY REPORTS

- (1) Property Reports: The Recipient shall submit annual inventory listing to all equipment in excess of \$5,000 acquired under this grant. Only individual items in excess of \$5,000 should be reported, not an aggregation of small items which may exceed \$5,000 in total cost.

VIII. OTHER ADMINISTRATIVE REQUIREMENTS

Not applicable.

IX. FEDERAL CONTACTS

Questions regarding program policy, program content, or technical issues should be directed to osd.dodstem@mail.mil.

Questions regarding administrative problems or grant administration should be directed to the Cognizant Procuring Grants Officer (PGO) and Administrative Grants Officer (AGO).

Questions regarding Grants.gov should be directed to the following:

- The Grants.gov support database at https://gditshared.servicenowservices.com/hhs_grants
- The toll-free telephone help desk: 1-800-518-4726 (U.S.) / 1-606-545-5035 (International)
- Email: support@grants.gov

X. OTHER INFORMATION

The Federal government is not obligated to make any Federal award as a result of the announcement. Only grants officers can bind the Federal government to the expenditure of fund.

Applicants are advised to monitor Grants.gov for potential amendments to this Notice of Funding Opportunity. The applicant can also elect to be automatically notified by Grants.gov whenever there is a change to the opportunity.

Applications must not include any information that has been identified as classified national security information under authorities established in Executive Order 12958, Classified National Security Information.

A. FEDERAL FUNDING ACCOUNTABILITY AND TRANSPARENCY ACT OF 2006

The Federal Funding Accountability and Transparency Act of 2006 (Public Law 109-282), as amended by Section 6202 of Public Law 110-252, requires that all agencies establish requirements for recipients reporting information on sub-awards and executive total compensation as codified in 2 CFR Part 170. Any company, non-profit agency or university that applies for financial assistance as either a prime or sub-recipient under this NOFO must provide information in its application that describes the necessary processes and systems in place to comply with the reporting requirements identified in 2 CFR Part 170 Appendix A. Entities are required to meet reporting requirements unless an exception or exemption applies. Refer to 2 CFR Part 170, including Appendix A, for a detailed explanation of the requirements, exceptions, and exemptions.

B. CERTIFICATION REGARDING RESTRICTIONS ON LOBBYING

Grant and Cooperative Agreement awards greater than \$100,000, as well as OTAs not under 10 U.S.C. 2371b, require a certification of compliance with a national policy mandate concerning lobbying. Grant applicants shall provide this certification by electronic submission of SF424 (R&R) as a part of the electronic application submitted via Grants.gov (complete Block 17). The following certification applies likewise to each Cooperative Agreement and normal OTA applicant seeking federal assistance funds exceeding \$100,000:

- (1) No Federal appropriated funds have been paid or will be paid by or on behalf of the applicant, 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 the Federal contract, grant, loan, or cooperative agreement, the applicant shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

- (3) The applicant shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, 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 Section 1352, title 31, U.S.C. 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.

C. REPRESENTATION REGARDING AN UNPAID DELINQUENT TAX LIABILITY OR A FELONY CONVICTION UNDER ANY FEDERAL LAW - DOD APPROPRIATIONS

All grant applicants are required to complete the “Representation on Tax Delinquency and Felony Conviction” and attaching the representation to Field 18 of the SF424 (R&R) as part of the electronic application submitted via Grants.gov. The representation reads as follows:

- (1) 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 timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- (2) The applicant represents that it is / is not () a corporation that was convicted of a felony 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 must 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 consideration before award decisions are made.

D. REPRESENTATION REGARDING THE PROHIBITION ON USING FUNDS WITH ENTITIES THAT REQUIRE CERTAIN INTERNAL CONFIDENTIALITY AGREEMENTS

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

By submission of its application 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, as applicable, the bases for this representation are the prohibition(s) as follow:

- (1) Section 743 of the Financial Services and General Government Appropriation Act, 2015 (Division E of the Consolidated and Further Continuing Appropriations Act, 2015, Pub. L. 113-235).
- (2) Section 101(a) of the Continuing Appropriation Act, 2016 (Pub. L. 114-53) and any subsequent FY2016 appropriations act that extends to FY2016 the same restrictions as are contained in section 743 of Division E, title VII of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub L. 113-235).
- (3) Pub. L. 114-223, Continuing Appropriations Act, 2017, or any other Act that extends to fiscal year 2017 funds the same prohibitions as contained in section 743, Division E, title VII, of the Consolidated Appropriations Act, 2016 (Pub. L. 114-113).
- (4) Any successor provision of law on making funds available through grants and cooperative agreements to entities with certain internal confidentiality agreements or statements.

The prohibitions stated above do not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

E. CODE OF CONDUCT

Applicants for grants, cooperative agreements, or other transaction agreements as applicable are required to comply with 2 CFR 200.318(c), Codes of Conduct, to prevent real or apparent conflicts of interest in the award and administration of any contracts supported by federal funds. This provision will be incorporated into all assistance instruments awarded under this NFO.

F. HUMAN SUBJECT RESEARCH

- (1) The applicant must protect the rights and welfare of individuals who participate as human subjects in research under this award, and comply with the requirements of the DoD Instruction 3216.02, Protection of Human Subjects and Adherence to Ethical Standards in DoD- Supported Research (2020).

- (2) For proposals containing activities that include research involving human subjects as defined in DoDI 3216.02, after award, the Applicant must submit documentation as requested by a DoD Human Research Protection Official (HRPO), outlined in the DoDI 3216.02.
- (3) Research involving human subjects must not commence until a HRPO has reviewed and approved the proposed human subject research. *NOTE: Institutional Review Board (IRB) approval isn't required for the Technical Application. However, upon notification of the award, applicants should start the process for IRB approval. Applicants selected for award must obtain an approved IRB 90 days after the start of the award and submit the IRB to HRPO. This includes IRB approved Human Research exemptions.
- (4) The following forms are required by HRPO and located under the "Related Documents" tab of this solicitation on Grants.gov:
 - The Human Research Protocol Submission Form
 - ORP Form

Non-approval of an IRB will be subject to the Prohibition of Use of Human Subjects (see Section K, page 43) which will delay the start of the grant.

- (5) Animal Use Research and other activities
Research or other activities involving animals must comply with DoDI 3216.01, "Use of Animals in DoD-Conducted and DoD-Supported Research and Training", all Federal Regulations, National Policy Requirements. Animal use activities must not commence until an Institutional Animal Care and Use Committee (IACUC) and appropriate DoD Component oversight office has reviewed and approved the proposed protocol articulating the animal use activity.
- (6) Use of Recombinant DNA or Synthetic Nucleic Acid Molecules
Proposals which call for experiments using recombinant or synthetic nucleic acid molecules must include documentation of compliance with NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines), approval from the local registered Institutional Biosafety Committee (IBC), and copies of the DHHS Approval of the IBC letter.

G. INSTITUTIONAL DUAL USE RESEARCH OF CONCERN

As of September 24, 2015, all institutions and United States Government (USG) funding agencies subject to the United States Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern must comply with all the requirements listed therein. If the applicant's research application directly involves certain biological agents or toxins, contact the cognizant Technical Point of Contact. U.S. Government Science, Safety, Security (S3) guidance may be found at <https://www.phe.gov/s3/dualuse>.

H. DEPARTMENT OF DEFENSE HIGH PERFORMANCE COMPUTING PROGRAM

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S&T and RDT&E communities with use-access to very powerful high performance computing systems. Awardees of WHS/AD contracts, grants, and other assistance instruments may be eligible to use HPCMP assets in support of their funded activities if WHS/AD Program Officer approval is obtained and if security/screening requirements are favorably completed. Additional information and an application may be found at <https://www.hpcmo.hpc.mil/>.

I. PROJECT MEETINGS AND REVIEWS

Individual program reviews between Program Office, DoD STEM, and the performer may be held as necessary. Department of Defense colleagues may participate in these reviews.

Program status reviews may also be held to provide a forum for reviews of the latest results from programs and any other incremental progress towards the major demonstrations. These meetings will typically be held at the Applicant's facility or in Alexandria, VA. Interim meetings are likely, but these will be accomplished via video telephone conferences, telephone conferences, or via web-based collaboration tools.

J. NDAA SECTION 889 COMPLIANCE

See the DoD R&D General Terms and Conditions (January 2023), Part 8, NP Article IV, Section A for compliance requirements regarding Section 889 of the NDAA for Fiscal Year 2019 (Public Law 115-232).

K. PROHIBITION OF USE OF HUMAN SUBJECTS

Research under this award involving the use of human subjects, to include research involving the use of human biospecimens²² and/or human data, cannot begin until the USAMRDC's Office of Research Protections (ORP) provides authorization that the research may proceed. The USAMRDC ORP will issue written approval to begin research under separate notification. Written approval to proceed from the USAMRDC ORP is also required for any subrecipient that will use funds from this award to conduct research involving human subjects, human biospecimens, and/or human data.

The USAMRDC ORP conducts site visits as part of its responsibility for compliance oversight. Recipients and subrecipients must comply with all applicable human research protections requirements. Accurate and complete study records must be maintained and made available to representatives of the USAMRDC as a part of their responsibility to protect human subjects in research.

²² This prohibition does not apply to research under this award that solely uses only one or both of the following types of human biospecimens to accomplish its aims: (1) established/existing commercially available human cell lines; (2) established/existing patient-derived xenograft (PDX) models.

Research records must be stored in a confidential manner so as to protect the confidentiality of subject information.

The recipient (and subrecipients) must adhere to the following reporting requirements:

Submission of study documents to the USAMRDC ORP for review and approval and provide the following reports: substantive modifications to the approved protocol, continuing review documentation (if applicable), and the final report as outlined in the USAMRDC ORP approval memorandum.

Prompt reporting of the following study events to the USAMRDC ORP HRPO.

- (1) All unanticipated problems involving risk to subjects or others.
- (2) Suspensions, clinical holds (voluntary or involuntary), or terminations of this research by the IRB, the institution, the sponsor, or regulatory agencies.
- (3) Any instances of serious or continuing noncompliance with the federal regulations or IRB requirements.
- (4) The knowledge of any pending compliance inspection/visit by the Food and Drug Administration (FDA), Office for Human Research Protections, or other government agency concerning this clinical investigation or research.
- (5) The issuance of inspection reports, FDA Form 483, warning letters, or actions taken by any government regulatory agencies.
- (6) Change in subject status when a previously enrolled human subject becomes a prisoner must be promptly reported to the USAMRDC ORP HRPO. The report must include actions taken by the institution and the IRB.

Non-compliance with these terms and conditions may result in withholding of funds and/or the termination of the award.

Submission instructions and investigator guidance on DoD requirements for human subjects research, including 32 CFR Part 219, DoD Instruction 3216.02, and USAMRDC ORP Human Research Protection Office submission instructions can be accessed at

https://mrhc.amedd.army.mil/index.cfm?pageid=research_protections.hrpo.

XI. INITIAL WORK PLAN

An Initial Work Plan (IWP), no longer than six (6) pages in length, must be submitted as part of this Application following the outline below:

Initial Work Plan

For Application Submitted In Response to NFO HQ003423NFOEASD01

Grant #:

Offeror:

Principal Investigator:

Project Title:

Proposed Period of Performance:

Public Benefit:

Project Abstract:

Proposed Research:

Research Scope:

Research Questions and Objectives:

Technical Approach (Methodology):

Applying the Approach:

Acknowledgement of Support: The Recipient is responsible for assuring that an acknowledgment of National Defense Education Program (NDEP) for Science, Technology, Engineering, and Mathematics (STEM) Education, Outreach, and Workforce Initiative Programs support is made in any publication (including World Wide Web pages) of any material based on or developed under this project, in the following terms: "This material is based upon work supported by the National Defense Education Program (NDEP) for Science, Technology, Engineering, and Mathematics (STEM) Education, Outreach, and Workforce Initiative Programs under Grant No. <Insert Grant No.>. The views expressed in written materials or publications, and/or made by speakers, moderators, and presenters, do not necessarily reflect the official policies of the Department of Defense nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government."

Review for Sensitive Information: Prior to the public release of these materials, the Recipient is responsible for assuring that the Technical Representative is provided access to an electronic version of every publication of material based on or developed under this award, clearly labeled with the award number and other appropriate identifying information, so that the content can be assessed for proper release of sensitive information.

Copies for USD(R&E): Promptly after publication, the Recipient will provide the Technical Representative access to an electronic version of every publication of material based on or developed under this award, clearly labeled with the award number and acknowledgement of support (see above).

Reporting Requirements

(1) Monthly Reports

- Monthly Financial Reports: The Government will provide a template to each starting grant. This report will include information on current expenses and invoices for the time period. This report will be submitted 30 days after the reporting period ends.

(2) Quarterly Reports

- Interim Research Performance Progress Reports (RPPR): The Recipient shall provide Interim RPPR to the Government Sponsor and the Government Technical Representative, **no later than 30 calendar days after the close of each quarter period.** The Government will provide a template to each starting grant. These reports shall detail the period's research activities, intermediate results, progress toward goals and other specific information and any issues that may impact completion of the planned work on schedule. If findings or discoveries are made that the Recipient feels are of sufficient importance that they would mitigate or impact naval operations, USD(R&E) should be notified immediately. This report will be submitted for three quarters and an annual report (see below) for the fourth quarter.
- Interim Federal Financial Report (SF 425): SF425 is required within 30 calendar days after the end of reported quarter period: 3/31, 6/30, 9/30, and 12/31 and must include in the remarks the location of financial records and a point of contact for the Government to obtain access to the financial records associated with this Grant.
- Federal Financial Report (SF 425): SF425 is required if receiving advance payments; the Recipient shall submit a Report of Federal Cash Transactions (SF 425) within 15 calendar days following the end of each quarter. The Recipient shall provide forecasts of Federal cash requirements in the "Remarks" section of the report.

(3) Annual Reports

- Annual Research Performance Progress Report (RPPR): The Grantee shall provide an Annual RPPR to the Government Sponsor and the Government Technical Representative, to be submitted annually from the date the grant was awarded. The Government will provide a template to each starting grant. A complete annual Performance Progress Report is mandated by the DoD. This reports shall detail the period's research activities, intermediate results, progress toward goals and other specific information and any issues that may impact

completion of the planned work on schedule. If findings or discoveries are made that the grantee feels are of sufficient importance that they would mitigate or impact naval operations, USD(R&E) should be notified immediately.

- Invention Reports: Submit interim DD882 at least annually, within 60 calendar days of the grant anniversary. Negative reports required.
- Annual DoD STEM Program Data Call Form: A manual and templates will be provided to each starting grant. These forms will include information about the organization and program specifics (overview, metrics, budget information, accomplishments, etc).

(4) Final Reports

- Final Report: Detail the full programmatic accomplishments summarized from prior reports and a forecast for ongoing program sustainability and contribution to DoD STEM, Biotech, or Enhanced Civics education and workforce needs as the funding ends. Include, as feasible, examples of educational materials produced, success stories, accomplishments, links to digital materials, and other resultant material from the award.
- Final Federal Financial Report (SF 425): SF425 is required within 90 calendar days of the completion date for the term of this Grant and must include in the remarks the location of financial records and a point of contact for the Government to obtain access to the financial records associated with this Grant.
- Invention Report: Submit final DD882 within 90 calendar days after the expiration of the grant. Negative reports required.

(5) Property Rights

The Recipient shall submit annual inventory listing to all equipment in excess of \$5,000 acquired under this grant. Only individual items in excess of \$5,000 should be reported, not an aggregation of small items which may exceed \$5,000 in total cost.

(6) Document Submission

All reporting requirements above shall be sent via email to the Grants Officer and the Government Technical Representative.

(7) Other Points of Contact

Technical Representative – osd.dodstem@mail.mil

Grants Office (Grantor) – Mr. Jonathan Bertsch at jonathan.e.bertsch.civ@mail.mil

XII. WHITE PAPER TEMPLATE

Use of this template is mandatory for all white paper submissions to this NFO.

Title	
Institution	
Topic of Interest	
Technical Point of Contact (POC)	Name: Telephone: Email:
Administrative POC	Name: Telephone: Email:
Other Team Members (subcontractors and consultants), if known/applicable	Technical POC Name: Organization: Technical POC Name: Organization:
Estimated Total Cost (Base + Options)	\$

White Paper Format

- Paper Size – 8.5 x 11 inch paper
- Margins – 1 inch
- Spacing – single spaced
- Font – Times New Roman, 12 point
- Page limit – 7 pages. A 2-page Curricula Vitae (CV) and References are not included in the total page limit. Only include the CV of the lead PI.
- Submitted files must be in a .pdf format.

White Paper Sections

Summary (1 Page Maximum)

[A summary of the proposed effort. Proposed public benefit must be expressly addressed.]

Technical Concept (3 Page Maximum)

[A description of the proposed effort and how it advances the DoD STEM mission. The project idea, technical rationale, and approach must identify a problem(s), arguments to substantiate the claims made, and proposed approach to address the issue. The Applicant's capacities must be discussed as they relate to achieving success in the project, to include effective program evaluation and sustainability plans. The project must address the Topic of Interest stated in Section I.C. and provide answers to the following:

- What does the proposed work aim to accomplish or do? If applicable, how are these goals related to and advancing any current outcomes of existing programs?
- What is the approach to meeting those goals?
- What will the impact be if the work is successful?
- Discuss how the effort will be evaluated, including what metrics will be collected and evaluation method(s) used.]

Relevance to Topic(s) of Interest specified in the NFO amendment or Industry Day/Opportunity Day (1 Page Maximum)

[A description of relevance to Topic(s) of Interest. How does it meet the goals of the Topic of Interest, as outlined in the NFO Amendment or Industry Day/Opportunity Day?]

Rough Order of Magnitude Cost (1 Page Maximum)

[White papers shall include a rough order of magnitude cost showing requested funding per year and total cost, and which suggests spending priorities to satisfy Section I.C. This includes, but is not limited to, a rough explanation of anticipated costs including indirect, direct, administrative, overhead, labor, travel, and sub-contracting costs. Also describe a strategy for program sustainability, such that following the completion of DoD STEM's investment under this funding opportunity, the effort will have a clear financial path and leave enduring organization capability.]

CV and References (2 Page CV Maximum)

[The CV of the lead PI, as well as any accompanying references, should be included at the end of the document.]

XIII. APPENDIX

Convergence Education is driven by compelling or complex socio-scientific problems or topics, where learners apply knowledge and skills using a blended approach across multiple disciplines (i.e., transdisciplinary) to create and innovate new solutions.²³

Computational Literacy is the ability to use information, information processing agents, digital assets, networking components, and applications and systems that, combined, allow people and organizations to interact in a digital world to solve problems, either individually or with a team; to draw meaning and reasonable conclusions from digital information in both personal and professional contexts; to safely, ethically, and securely use networks (wired and wireless) and data; and to understand how computing, data, and connectivity affects society.

Computational literacy helps an individual –

- (A) ethically, securely, safely, and efficiently use information processing agents, digital tools, and digital platforms to teach, learn, and solve problems, including problems with sensitive information;
- (B) problem-solve (e.g., decomposing problems into manageable pieces; heuristic reasoning; algorithmic thinking computational thinking);
- (C) think recursively;
- (D) navigate multiple levels of abstraction;
- (E) recognize patterns;
- (F) collect, analyze, manage, visualize, and communicate data;
- (G) translate domain knowledge into mathematical and visual models;

²³ Interagency Working Group on Convergence, Federal Coordination in STEM Education Subcommittee, Committee on STEM Education, *Convergence Education: A Guide to Transdisciplinary STEM Learning and Teaching*, 2022, https://www.whitehouse.gov/wp-content/uploads/2022/11/Convergence_Public-Report_Final.pdf.

- (H) understand the social, technical, and cultural dynamics of computational technology, including equity, inclusion, and accessibility; and
- (I) critically evaluate related technologies.²⁴

Section 234 of the NDAA for FY2020, Pilot Program on Enhanced Civics Education:

- (a) In General. – The Secretary of Defense, in consultation with the Secretary of Education, shall carry out a pilot program under which the Secretary provides enhanced educational support and funding to eligible entities to improve civics education programs taught by such entities.
- (b) Purpose. – The purpose of the pilot program is to provide enhanced civics education on the following topics:
 - (1) Critical thinking and media literacy.
 - (2) Voting and other forms of political and civic engagement.
 - (3) Interest in employment, and careers, in public service.
 - (4) Understanding of United States law, history, and Government.
 - (5) The ability of participants to collaborate and compromise with others to solve problems.
- (c) Considerations. – In carrying out the pilot program, the Secretary of Defense shall consider innovative approaches for improving civics education.
- (d) Metrics and Evaluations. – The Secretary of Defense shall establish metrics and undertake evaluations to determine the effectiveness of the pilot program, including each of the activities carried out under subsection (e).
- (e) Types of Support Authorized. – Under the pilot program the Secretary of Defense–
 - (1) Shall provide support to eligible entities to address, at a minimum–
 - (A) the development or modification of curricula relating to civics education;
 - (B) classroom activities, thesis projects, individual or team projects, internships, or community service activities relating to civics;
 - (C) collaboration with government entities, nonprofit organizations, or consortia of such entities and organizations to provide participants with civics-related experiences;
 - (D) civics-related faculty development programs;
 - (E) recruitment of educators who are highly qualified in civics education to teach civics or to assist with the development of curricula for civics education;

²⁴ White House Office of Science and Technology Policy, *2022 Progress Report on the Implementation of the Federal Science, Technology, Engineering, and Mathematics (STEM) Education Strategic Plan*, 2023.

- (F) presentation of seminars, workshops, and training for the development of skills associated with civic engagement;
 - (G) activities that enable participants to interact with government officials and entities;
 - (H) expansion of civics education programs and outreach for members of the Armed Forces, dependents and children of such members, and employees of the Department of Defense; and
 - (I) opportunities for participants to obtain work experience in fields relating to civics; and
 - (2) May provide any other form of support the Secretary determines to be appropriate to enhance the civics education taught by eligible entities.
- (f) Report. – Not later than 180 days after the conclusion of the first full academic year during which the pilot program is carried out, the Secretary of Defense shall submit to the congressional defense committees a report that includes–
- (1) a description of the pilot program, including the a description of the specific activities carried out under subsection (e); and
 - (2) the metrics and evaluations used to assess the effectiveness of the program as required under subsection (d).
- (g) Definitions. – In this section:
- (1) The term “civics education program” means an educational program that provides participants with–
 - (A) knowledge of law, government, and the rights of citizens; and
 - (B) skills that enable participants to responsibly participate in democracy.
 - (2) The term “eligible entity” means any of following:
 - (A) A local education agency that hosts a unit of the Junior Reserve Officers' Training Corps.
 - (B) A school operated by the Department of Defense Education Activity.