FEDERAL AWARDING AGENCY:	Washington Headquarters Services Acquisition Directorate (WHS/AD)
FUNDING OPPORTUNITY TITLE:	Minerva Research Initiative
ANNOUNCEMENT TYPE:	Initial Announcement
NOTICE OF FUNDING OPPORTUNITY (NFO) NUMBER:	HQ003422NFOEASD07
ASSISTANCE LISTING:	12.431 Basic Scientific Research
KEY DATES:	White Papers: Friday, October 14th, 2022 1500 Eastern Full Applications: Thursday, February 9th 2023 1500 Eastern
AGENCY CONTACT:	Jonathan Bertsch Grants Officer, WHS/AD E-mail: jonathan.e.bertsch.civ@mail.mil

CONTENTS

I. **PROGRAM DESCRIPTION**
   A. **SHORT DESCRIPTION OF FUNDING OPPORTUNITY**
   The Office of the Secretary of Defense (OSD) is interested in receiving proposals for the Minerva Research Initiative (http://minerva.defense.gov), a university-led defense social science program seeking fundamental understanding of the social and cultural forces shaping U.S. strategic interests globally. OSD is particularly interested in projects that align with and support the upcoming 2022 National Defense Strategy.

   B. **BACKGROUND**
   Minerva aims to improve DoD's basic understanding of the social, cultural, behavioral, and political forces that shape regions of the world of strategic importance to the U.S. The research program seeks to:

   - Leverage and focus the resources of the Nation's top universities;
   - Define and develop foundational knowledge about sources of present and future conflict with an eye toward better understanding of the political trajectories of key regions of the world; and
   - Improve the ability of DoD to develop cutting-edge social science research, foreign area and interdisciplinary studies, that is developed and vetted by the best scholars in these fields.

   Minerva brings together universities, research institutions, and individual scholars and supports interdisciplinary and cross-institutional projects addressing specific topic areas determined by the Secretary of Defense.

   C. **PROGRAM DESCRIPTION/OBJECTIVE**
   The Minerva Research Initiative (Minerva) emphasizes questions of strategic importance to U.S. national security policy. It seeks to increase the Department's intellectual capital in the social sciences and improve its ability to address future challenges and build bridges between the Department and the social science community. Minerva brings together universities and other research institutions around the world and supports multidisciplinary and cross-institutional projects addressing specific interest areas determined by the Department of Defense. The Minerva program aims to promote research in specific areas of social science and to promote a candid and constructive relationship between DoD and the social science academic community.

   The Minerva Research Initiative competition is for research related to six (6) topics listed below. Innovative white papers and proposals related to these research areas are highly encouraged. Detailed descriptions of the interest areas—which are intended to provide a frame of reference and are not meant to be restrictive—can be found in Section IX, "Minerva Topics."

   Topic 1: Socio-economic vulnerability to climate change
   Topic 2: Deterrence in the Future Operating Environment
   Topic 3: Russian Speakers in Online Spaces

Topic 4: Power and Influence in the Era of Strategic Competition
Topic 5: The Arctic as a Polar Crossroads
Topic 6: Management and Information in the Defense Environment

Proposals will be considered both for single-investigator awards as well as larger teams. A team of university investigators may be warranted because the necessary expertise in addressing the multiple facets of the interest areas may reside in different universities, or in different departments of the same university. The research questions addressed should extend across a fairly broad range of linked issues where there is clear potential synergy among the contributions of the distinct disciplines represented on the team. Team proposals must name only one Principal Investigator as the responsible technical point of contact. Similarly, one institution will be the primary recipient for the purpose of award execution. The relationship among participating institutions and their respective roles, as well as the apportionment of funds including sub- awards, if any, must be described in both the proposal text and the budget. As well, the basic research contribution of the project must be clearly described in the proposal text.

The Minerva Research Initiative is a multi-service effort. Ultimately, however, funding decisions will be made by OSD personnel, with technical inputs from the Services.

D. AUTHORIZATION
10 U.S.C. 4001 Research and development projects

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 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
A. AWARD HISTORY AND INSTRUMENT
This NFO is a follow-on to WHS-AD-FOA-21 and is expected to result in the award of a grant or grants as defined at 31 U.S.C. 6304. The grant(s) will be awarded to "eligible entities" as defined at 10 U.S.C. 2192(b)(3), which includes a department or agency of the Federal Government, a State, a political subdivision of a State, an individual, and a not-for-profit or other organization in the private sector. Further eligibility information can be found in Section III of this NFO.

B. FUNDING AMOUNT AND NUMBER OF AWARDS
This Notice of Funding Opportunity (NFO) intends to fund ten to twelve grant awards, with each grant valued up to $1,000,000 per year, with a three- to five-year period of performance. The total amount awarded from this NFO will not exceed $15,000,000. These funding amounts include both direct and indirect costs. Applicants are reminded that this request is subject to Federal funding appropriations and Departmental approval.

DoD anticipates that awards will be made in the form of grants to institutions of higher education (universities).

There is no guarantee that any of the proposals submitted in a particular category will be recommended for funding. More than one proposal may be recommended for funding for a particular category. The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this announcement.

C. PROFIT/FEE
Fee/profit is unallowable under assistance agreements at either the prime award or sub-award level, but may be permitted on subcontracts issued by the prime recipient.

D. PLACE OF PERFORMANCE
Performance is limited to the United States and its territories.

E. PERIOD OF PERFORMANCE
An award made as a result of this NFO will provide potential funding for up to five (5) years. The Government will review the grant(s) annually to assess the degree to which the recipient is making progress towards meeting the objectives of the agreement.

F. SUB-AWARDEES AND SUB-CONTRACTS
Each recipient may be augmented with sub-awards and subcontracts, especially for efforts to which a sub-awardee or subcontractor is particularly qualified. Additionally, the inclusion of small and women-owned businesses as sub-awardees and/or subcontracts are encouraged.

G. GOVERNMENT ROLE AND RESPONSIBILITY
The assistance being contemplated under this NFO will be in the form of a grant or grants to successful applicants. Substantial involvement is not expected between the executive agency and the State, local government, or other recipient when carrying out the activity contemplated in the NFO or any resultant award, per 31 U.S.C. 6304(2).

III. ELIGIBILITY INFORMATION

A. ELIGIBLE INSTITUTIONS

All responsible sources from academia, including DoD institutions of higher education and foreign universities, may submit proposals under this FOA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals. No portion of this FOA, however, will be set aside for HBCU and MI participation.

Teams are encouraged and may submit proposals in any and all areas. Non-profit institutions and commercial entities may be included on a university-led team as subawardees only, receiving funding for their efforts accordingly. Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this FOA. However, teaming arrangements between FFRDCs and eligible principal applicants are allowed provided they are permitted under the sponsoring agreement between the Government and the specific FFRDC.

Grants to a university may be terminated if the Principal Investigator (PI) severs connections with the university or is unable to continue active participation in the research. Grants to a university may also be terminated if the university severs connections with the PI.

B. OTHER ELIGIBILITY CRITERIA

Number of PIs: A single PI must be designated on the application to serve as administrative and technical project lead. There is no restriction on the number of additional key research personnel who can be included on a single application, but each position should be justified by the scope and focus of the research.

Number of Applications: There is no limit to the number of applications that an individual PI may have submitted by their institution in response to this FOA.

C. COST SHARE OR MATCHING

Cost sharing is not required.

D. CONFLICT OF INTEREST

1. GENERAL REQUIREMENT FOR DISCLOSURE

The Applicant must disclose any potential or actual scientific or nonscientific conflict of interest(s) to the Government. The Applicant must also disclose any potential or actual conflict(s) of interest for any identified sub recipient you include 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 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 you provide for senior and key researchers. Therefore, you must include in your list of current and pending support all collaborators, even if they did not formally provide support.

3. 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.

a) CERTIFICATIONS, REPRESENTATIONS, AND ASSURANCES

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. See the Standard Language Describing the Grants.gov Application Process and Section IV.F.4 for details on how to register in SAM, and at 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, you are still required to submit any documentation, including the SF-LLL Disclosure of Lobbying Activities (if applicable), and, if applicable, informing DoD of unpaid delinquent tax liability or a felony conviction under and Federal law.

b) PROTECTION OF HUMAN SUBJECTS

For applications 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. Additional information and requirements can be found in Section X.C.

IV. APPLICATION AND SUBMISSION INFORMATION
A. SUBMISSION DATES AND TIMES

The Minerva application process is conducted in two stages:
- Stage 1 – White Paper submission (via email to the Section IX technical point of contact)
  - Deadline: Friday, October 14th, 2022 3:00 PM ET
- Stage 2 – Full Application submission (via Grants.gov)
  - Deadline: Thursday, February 9th, 2023 3:00 PM ET

Stage 1 – Interested entities are strongly encouraged to submit white papers, an opportunity for reviewer feedback intended to minimize the labor and cost associated with the production of detailed proposals that have little chance of being selected for funding. Based on an assessment of the white papers submitted, the responsible point-of-contact (POC) (see Section IX) will advise prospective proposers whether the proposals outlined in their white papers were judged to be competitive for Minerva award selection, and will then invite the most promising subset of proposals to submit a full proposal for funding consideration.

Interested entities are strongly encouraged to contact the appropriate POC two or more weeks prior to white paper submission to discuss their ideas. White papers and other technical queries arriving after the deadline are unlikely to receive feedback unless an invitation for full proposal submission has been extended.

Stage 2 – Subsequent to white paper feedback, interested entities are required to submit full proposals. All proposals submitted under the terms and conditions cited in this FOA will be evaluated in accordance with the evaluation criteria stated herein. Entities may submit a proposal without submitting a white paper, though this is discouraged. Interested parties who do not participate in the white paper review stage should contact the appropriate POC prior to submission of a full proposal to discuss options, though feedback at that late stage is not guaranteed. Full proposals submitted after the posted deadline will not be evaluated for funding consideration.

B. **ADDRESS TO REQUEST APPLICATION PACKAGE**
The application package for this NFO is only available via Grants.gov.

C. **APPLICATION PROCEDURES AND REQUIREMENTS**
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 (via E-mail for Stage 1 and via Grants.gov for Stage 2) no later than the dates and times listed in Section IV.A.

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 2 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.

For full instructions on registration and submission instructions, see Attachment A: Registration and Submission Instructions.

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 FORMATION OF SUBMISSIONS
    1. GENERAL REQUIREMENTS
    a) DOCUMENT FORMAT
        All documents included in both white paper and full application packages must be submitted in Adobe Portable Document Format (PDF) in compliance with the guidelines below. Applications with attachments submitted in word processing, spreadsheet, zip, or any format other than Adobe Portable Document format will not be considered for award. NOTE: Titles given to the white papers/full applications should be descriptive of the work they cover and not be merely a copy of the title of this solicitation.

        Documents must be submitted with the following specifications:
- Paper Size – 8.5 x 11-inch paper
- Margins - 1 inch
- Spacing – single spaced
- Font – Times New Roman, 11 point
- PI's and co-PI's name and institutions in header or footer
- Appropriate markings on each page that contains proprietary or confidential information, if applicable.

        White papers, supporting documentation, and full applications submitted under this NFO are unclassified.

b) MARKING PROPRIETARY OR CONFIDENTIAL INFORMATION
OSD and WHS/AD will make every effort to protect any proprietary information submitted in white papers and full applications. Any proprietary information included in application materials must be identified. Prospective proposers should be aware, however, that under the Freedom of Information Act (FOIA) requirements, proprietary information contained in white papers and applications (marked or unmarked) may still potentially be subject to release.

It is the prospective applicants' responsibility to notify WHS/AD of applications containing proprietary information and to identify the relevant portions of their applications that require protection. The entire application (or portions thereof) without protective markings or otherwise identified as requiring protection will be considered to be furnished voluntarily to WHS/AD without restriction and will be treated as such for all purposes.

It is the intent of WHS/AD to treat all white papers and full applications as proprietary information before the award and to disclose their contents to reviewers only for the purpose of evaluation.

2. WHITE PAPER PREPARATION AND SUBMISSION
a) WHITE PAPER PACKAGE COMPONENTS
Submitted documentation should be in PDF format and include in a single document:
- A cover letter (optional), not to exceed one page.
- A cover page, labeled "APPLICATION WHITE PAPER," that includes the NFO number, proposed project title, and prospective applicant's technical point of contact with telephone number, e-mail address, and most relevant area number(s) and title(s) (see Section IX).
- Curriculum vitae (CV) of key investigators (optional)
- The white paper (four (4) page limit, single-sided) including:
  o Identification of the research and issues including the state of the field
  o Proposed methods
  o Potential contribution to fundamental social science basic research
  o Potential implications for national defense
  o Potential team and management plan
  o Data management plan for data or tools to be generated in the course of research
  o Summary of estimated costs
  o Reference citations are not required but may be included outside the four-page limit

The white paper should provide sufficient information on the research being proposed (e.g., hypothesis, theories, concepts, methods, approaches, data collection, measurement and analyses) to allow for an assessment by a subject matter expert.

b) **WHITE PAPER SUBMISSION**
White papers and supporting documentation must be submitted as email attachments to osd.minerva@mail.mil no later than 3:00 p.m. Eastern Time on October 14th, 2022. E-mail transmission is not instantaneous and delays in transmission may occur anywhere along the route. The Government takes no responsibility for any delays in the transmission of an e-mail. The prospective applicant is responsible for allowing enough time to complete the required application components, upload the white paper, and submit via e-mail before the deadline. It is not necessary for white papers to carry official institutional signatures.

The submission email subject line should indicate relevant area categories (see Section IX), written as: FY22 Minerva FOA WP - Area [Topic Number]

An e-mail confirmation will be sent to the applicant within two days of submission. Documents submitted after the deadline or found to be non-compliant with the requirements described above will not be reviewed.

3. **FULL PROPOSAL PACKAGE PREPARATION AND SUBMISSION**
a) **SF424 RESEARCH AND RELATED (R&R) APPLICATION FOR FEDERAL ASSISTANCE**
The SF-424 (R&R) form must be used as the cover page for all applications. Forms are completed in Grants.gov Workspace by either completing the forms on-line using a web browser and/or downloading individual PDF forms, completing them, and uploading them to the Workspace. Complete all required fields in accordance with the on-screen help or "pop-up" instructions on the PDF form and the following instructions for specific fields. To see the instructions, click on the on-screen help icons or roll the mouse over the PDF field to be filled out and additional information about that field will be displayed. For example, on the SF-424 (R&R) the Phone Number field says "PHONE NUMBER (Contact Person): Enter the daytime phone number for the person to contact on matters relating to this application. This field is required." Mandatory fields will have an asterisk marking the field and will appear yellow on most computers. In Grants.gov, some fields will self-populate based on the NFO selected.

Please fill out the SF-424 first, as some fields on the SF-424 are used to auto populate fields in other forms. The completion of most fields is self-explanatory except for the following special instructions:
- Field 3 – Date Received by State. The Date Received by State and the State Application Identifier are not applicable to research.
- Field 4a – Federal Identifier. No identifier required.
- Field 4b – Agency Routing Identifier. Input "RD [Minerva FY22 FOA Topic #]" For the Topic #, input the number corresponding to the topic area to which the proposal is being submitted.

- Field 7 – Type of Applicant. Complete as indicated. If the organization is a Minority Institution, select "Other" and under "Other (Specify)" note that the institution is a Minority Institution (MI).
- Field 9 – Name of Federal Agency. List the "Washington Headquarters Services Acquisition Directorate" as the reviewing agency. This field is pre-populated in Grants.gov.
- Field 16 – Is Application Subject to Review by State Executive Order 12372 Process? Choose "No". Check "Program is Not Covered by Executive Order 12372."
- Field 17 – Certification. All awards require some form of certifications of compliance with national policy requirements. By checking the "I agree" box in field 17, and attaching the representation to field 18 of the SF424 (R&R) as part of the electronic proposal submitted via Grants.gov, the Grant Applicant is providing the certification on lobbying required by 32 CFR Part 28 and representation regarding an unpaid delinquent tax liability or a felony conviction under any federal law – DoD appropriations.

b) **R&R SENIOR/KEY PERSON PROFILE FORM (EXPANDED)**

Complete the R&R Senior/Key Person Profile (Expanded) form for those key persons who will be performing the research. Information about an individual is subject to the requirements of the Privacy Act of 1974 (Public Law 93 579). The information is requested under the authority of Title 10 USC, Sections 4001 and 8013.

To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. A§ 1681 Et. Seq.), the Department of Defense is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in STEM disciplines. The Degree Type and Degree Year fields on the Research and Related Senior/Key Person Profile (Expanded) form will be used by DoD as the source for career information. In addition to the required fields on the form, applicants must complete these two fields for all individuals that are identified as having the project role of PD/PI or Co-PD/PI on the form. Additional senior/key persons can be added by selecting the "Next Person" button.

The principal purpose and routine use of the requested information are for evaluation of the qualifications of those persons who will perform the proposed research. Failure to provide such information will delay award. Attach curricula vitae (CVs) and/or a Biographical Sketch for the principal investigator and senior staff. CVs should list any previous DoD funding and engagement within the last eight years including project titles.

Attach statements of current and pending support for the Principal Investigators and co-investigators listed in the application, as applicable. These statements require that each investigator specify all grants and contracts

through which he or she is currently receiving or may potentially receive financial support. Describe the research activities and amount of funding.

Page limits for attachments:
- Key Personnel Curriculum Vitae (five (5) page limit)
- Key Personnel Biographical Sketches (two (2) page limit each)

c) **R&R PERSONAL DATA FORM**
To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. 1681), the Department of Defense is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in STEM disciplines.

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

d) **PROJECT/PERFORMANCE SITE LOCATIONS FORM**
Complete all information as requested.

e) **R&R OTHER PROJECT INFORMATION FORM**
- Fields 1 and 1a - Human Subject Use. Each application must address human subject involvement in the research by addressing Fields 1 and 1a of the R&R Other Project Information form.
  - It is expected that the selected investigative teams will create their HSR plans, applications to required ethics panels and institutional review boards (IRBs), and DoD reviews after receiving an initial award.
  - No DoD-funded HSR may be conducted until the DoD Human Research Protection Official (HRPO) review is satisfied, including DoD-funded pilot studies. At the time of submittal, for any white paper submissions potentially involving international or medically-related HSR, the prospective investigator must also directly contact the Minerva Program Officer and the DoD Office for Human Research Protections (DOHRP) at DOHRP@mail.mil.

- At the time of submittal, for any white paper submissions potentially involving Service Members, prisoners, detainees, children, or other vulnerable populations in the participant pool for HSR, the prospective investigator must also directly contact the Minerva Program Officer and the DOHRP at DOHRP@mail.mil.
- For other HSR within the United States, prospective investigators may contact the following offices regarding required documentation and procedures:
  - Air Force: usaf.pentagon.af-sg.mbx.afmsa-sge-c@mail.mil
  - Navy: ONRHRPO@navy.mil

- Fields 2 and 2a - Animal Use. Each application must address animal use protocols by addressing Fields 2 and 2a of the R&R Other Project Information form.
  - If animals are to be utilized in the research effort proposed, the prospective applicant must submit prior to award a DoD Animal Use Protocol with supporting documentation (copies of Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) accreditation and/or National Institute of Health assurance, Institutional Animal Care and Use Committee (ACUC) approval, research literature Database searches, and the two most recent USDA inspection reports). For assistance with submission of animal research related documents, contact Minerva staff to identify the appropriate point of contact.
- Fields 4a through 4d - Environmental Compliance. Federal agencies making grant or cooperative agreement awards and recipients of such awards must comply with various environmental requirements. The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. Sections 4321- 4370 (a), requires that agencies consider the environmental impact of "major Federal actions" prior to any final agency decision. With respect to those awards which constitute "major Federal actions," as defined in 40 CFR 1508.18, federal agencies may be required to comply with NEPA and prepare an environmental impact statement (EIS), even if the agency does no more than provide grant funds to the recipient.
  - Questions regarding NEPA compliance should be referred to Minerva program staff. Most research efforts funded through the Minerva program will, however, qualify for a categorical exclusion from the need to prepare an EIS. For those applying under Navy projects, Navy instructions/regulations provide for a categorical exclusion for basic and applied scientific research usually confined to the laboratory, if the research complies with all other applicable safety, environmental and natural resource conservation laws. Each application shall address environmental impact by filling in Fields 4a through 4d of the R&R Other Project Information form. This information will be used by DoD to make a determination if the proposed research effort qualifies for categorical exclusion.

- Field 7 – Project Abstract/Summary. In a single page, describe the research problem, proposed methods, basic research contribution, anticipated outcome of the research, if successful, and impact on DoD capabilities or broader implications for national defense. Identify the Principal Investigator, the university/research institution (and other institutions involved in the Minerva team, if applicable), the application title, the Minerva interest area number, and the total funds requested from DoD for the 2-year period.
- Field 8 – Project Narrative. Describe clearly the research, including the objective and approach to be performed, keeping in mind the evaluation criteria listed in Section V Application Review Information.
  - Generate a single PDF file containing all application narrative sections described below and attach as the R&R Other Project Information form in Field 8. Full applications exceeding the page limits defined below may not be evaluated.
    - Cover Page, including:
      - Application title
      - Institution application number
      - Interest area number and title
      - Principal Investigator name
      - Phone number, fax number, and e-mail address
      - Institution, Department, Division
      - Institution address
      - Other institutions involved in the Minerva team, if applicable
      - Whether the PI is a past or current DoD Contractor or Grantee. If yes, provide agency and point of contact information.
    - Table of Contents. List project narrative sections and corresponding page.
    - Technical Narrative (12-page limit for this section, excluding list of references). Describe the basic scientific or technical concepts that will be investigated, giving the complete research plan. Describe the technical approach and what makes it innovative. Discuss the relationship of the proposed research to the state-of-the-art knowledge in the field and to related efforts in programs elsewhere, and discuss potential scientific breakthroughs, including appropriate literature citations/references. Discuss the nature of expected results. Discuss potential applications to defense missions (including alignment with the National Defense Strategy) and requirements. Describe plans for the research training of students, especially PME students. Include the number of full time equivalent graduate students and undergraduates, if any, to be supported each year. Discuss the involvement of other students, if any.
    - Project Schedule, Milestones, and Deliverables (2-page limit for this section). A summary of the schedule of events, milestones, and

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a detailed description of the results and products to be delivered. Any proposed option period beyond three years should be explicitly scoped accordingly.

- Management Approach (1-page limit for this section). A discussion of the overall approach to the management of this effort, including brief discussions of: required facilities; relationships with any subawardees and with other organizations; availability of personnel; and planning, scheduling, and control procedures.
    - Designate only one civilian university Principal Investigator for the award to serve as the primary point-of-contact. List as well the PME co-PI. Briefly summarize the qualifications of the civilian university PI and the PME co-PI and other key investigators to conduct the proposed research.
    - Describe in detail proposed subawards to other eligible universities or relevant collaborations (planned or in place) with government organizations, industry, or other appropriate institutions. Particularly describe how collaborations are expected to facilitate the transition of research results to applications. If subawards to other universities/institutions are proposed, make clear the division of research activities, to be supported by detailed budgets for the proposed subawards.
    - Describe plans to manage the interactions among members of the proposed research team, if applicable.
    - Identify other parties to whom the proposal has been, or will be sent, including agency contact information.
- Facilities. Describe facilities available for performing the proposed research 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. Reference the facilities grant and/or contract number or, in the absence of a facilities grant/contract, the specific facilities or equipment and the number of the award under which they are accountable.

- Field 9 – Bibliography and References Cited. Attach a listing of applicable publications cited in above sections.
- Fields 10 and 11 – These fields are not required.
- Field 12 – Other Attachments. In addition to the Research and Related (R&R) Budget form, researchers are encouraged to submit a comprehensive, single page version of the budget for the prime and subawardee institutions, where rows are budget categories and columns indicate budget periods.

Letters of support are neither required nor expected in application packages. Some prospective proposers may feel a letter of support demonstrating the

importance of the research to the national security community may strengthen their proposals. Such letters should not exceed 2 pages.

f) R&R BUDGET FORM
You must provide a detailed cost breakdown of all costs, by year and cost category, corresponding to the proposed Technical Approach which was provided in Field 8 of the R&R Other Project Information Form. Any proposed option years must be separately priced. For planning purposes, assume that grant awards will begin in June 2023.

- Budget Elements: Annual budgets should be driven by program requirements. Elements of the budget should include:
  - Direct Labor — Individual labor category or person, with associated labor hours and unburdened direct labor rates. Provide escalation rates for out years. Provide the basis for the salary proposed. If labor costs are not provided for listed principal investigators, the budget justification document should include an explanation
  - 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.
  - Indirect Costs — Fringe benefits, overhead, G&A, etc. (must show base amount and rate). Provide the most recent rates, dates of negotiations, the period to which the rates apply, and a statement identifying whether the proposed rates are provisional or fixed. If the rates have been negotiated by a Government agency, state when and by which agency. Include a copy of the current indirect rate agreement (via Field 12 of the Research and Related Other Project Information Form). Note, civilian university indirect costs apply only to the civilian university portion of the grant.
  - Travel — Identify any travel requirements associated with the proposed research and define its relationship to the project. List proposed destinations, cost estimate, and basis of cost estimate. Please include all Service or Minerva program travel needs, described further in Section X.A, Expectations for Minerva Researchers.
  - Subawards — Provide a description of the work to be performed by the subrecipients. For each subaward, a detailed cost proposal is required to be included in the principal investigator's cost proposal. Fee/profit is unallowable.
  - Consultant — Consultants are to be used only under exceptional circumstances where no equivalent expertise can be found at a participating university; strong justification is required. Provide

consultant agreement or other document that verifies the proposed loaded daily/hourly rate. Include a description of the nature of and the need for any consultant's participation. Provide budget justification.

- o Materials — Specifically itemized with costs or estimated costs. Justify.
- o Other Directs Costs — Provide an itemized list of all other proposed 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). NOTE: If the grant application is for a conference, workshop, or symposium, the application should include the following statement: "The funds provided by the Department of Defense will not be used for food or beverages."
- o Fee/Profit — Fee/profit is unallowable.

- Budget justification: The budget proposal should include a budget justification for each year, clearly explaining the need for each item and attached to Section L of the R&R Budget form.
- Budget summary: In addition to the Research and Related Budget form, researchers are encouraged to submit a comprehensive, single page version of the budget for the prime and subawardee institutions, where rows are budget categories and columns indicate budget periods. Include as an attachment to R&R Other Project Information Form Field 12 ("Other Attachments").
- Cost sharing is not a factor in the evaluation but is permitted. Cost sharing may support items such as salaries, indirect costs, operating expenses, or new equipment. In each category, show the amount and nature of the planned expenditure share (e.g., equipment, faculty release time for research). A signed statement of commitment regarding the cost sharing or matching funds described above must be obtained from the appropriate institutional and/or private sector officials, and included at time of submission. Any cost sharing or matching plan should be included in the budget justification.

g) **SFLLL DISCLOSURE OF LOBBYING ACTIVITIES (OPTIONAL FORM)**
   If the applicant is required to disclose any lobbying activities, complete the SF-LLL and include it with the other forms in the application package.

   4. **GRANTS.GOV APPLICATION SUBMISSION PROCEDURES AND RECEIPT**
This section provides the application submission and receipt instructions for WHS/AD program applications. Please read the following instructions carefully and completely. WHS/AD is participating in the Grants.gov initiative to provide the grant community with a single site to find and apply for grant funding opportunities. WHS/AD requires applicants to submit their applications online through Grants.gov.

a) HOW TO REGISTER TO APPLY THROUGH GRANTS.GOV
Applicants must be registered with SAM and have a Grants.gov account in order to apply for Federal assistance. If individual applicants are eligible to apply for this funding opportunity, then they may move to Create a Grants.gov Account, below. Complete instructions can be found here:
https://www.grants.gov/web/grants/applicants/organization-registration.html.

b) HOW TO SUBMIT AN APPLICATION TO WHS/AD VIA GRANTS.GOV
Once an applicant has completed the registration process, applicants are encouraged to use the Grants.gov Workspace feature to prepare and submit their application. Workspace is the standard way for organizations or individuals to apply for federal grants in Grants.gov. Workspace allows a grant team to simultaneously access and edit different forms within an application, and allows applicants to fill out their forms online or offline. Once a Workspace is established, applicants are encouraged to complete the SF424 forms first, as information entered into the SF424 forms (applicant name, address, UEI, and so forth) will automatically transfer to other Workspace forms. More information and training on how to use Workspace can be found here:
https://www.grants.gov/web/grants/applicants/workspace-overview.html.

c) TIMELY RECEIPT REQUIREMENTS AND PROOF OF TIMELY SUBMISSION
All applications must be received no later than 3:00 p.m. Eastern Time on February 9th, 2023. Proof of timely submission is automatically recorded by Grants.gov. An electronic date/time stamp is generated within the system when the application is successfully received by Grants.gov. NOTE: White Papers should not be submitted through the Grants.gov Apply process, but rather by email as described in Section IV.F.2.b.

When WHS/AD successfully retrieves the application from Grants.gov, and acknowledges the download of submissions, Grants.gov will provide an electronic acknowledgment of receipt of the application to the applicant. Again, proof of timely submission shall be the official date and time that Grants.gov receives your application. Applications received by Grants.gov after the established due date for the program will be considered late and will not be considered for funding by DoD.

Applicants using slow internet, such as dial-up connections, should be aware that transmission can take some time before Grants.gov receives your application. Again, Grants.gov will provide either an error or a successfully received transmission in the form of an email sent to the applicant with the AOR role attempting to submit the application. The Grants.gov Support Center reports that some applicants end the transmission because they think that nothing is occurring during the transmission process. Please be patient and give the system time to process the application.

G. FUNDING RESTRICTIONS

An institution may, at its own risk and without prior approval, incur obligations and expenditures to cover costs up to 90 days before the beginning date of the initial budget period of a new or renewal award if such costs: 1) are necessary to conduct the project, and 2) would be allowable under the grant, if awarded, without prior approval.

All pre-award costs are incurred at the recipient's risk. OSD and the military service research organizations are under no obligation to reimburse such costs, if for any reason the institution does not receive an award or if the award is less than anticipated and inadequate to cover such costs.

V. APPLICATION REVIEW INFORMATION

A. SELECTION CRITERIA

The Minerva program seeks to invest in basic research and to identify challenging fundamental scientific areas of investigation that may have potential for long term benefit to DoD. Proposed research should describe cutting-edge efforts on basic scientific problems. Subject to funding availability, white papers and proposals will be evaluated under the following criteria:

Principal Criteria
1. **Scientific merit**, soundness, and programmatic strategy of the proposed basic social science research; and
2. Relevance and potential contributions of the proposed research to research areas of DoD interest as described in Section IX. The Minerva Research Initiative is *particularly interested* in applications that align with and support the upcoming 2022 National Defense Strategy.

Other Criteria
3. Potential **impact** of the basic research on the defense-relevant social sciences and defense communities that apply them. DoD encourages innovative submissions that, in addition to knowledge generation in critical areas, also build new communities, new frameworks, and new opportunities for dialogue.
4. The **qualifications** and availability of the civilian university Principal Investigators and PME co-PI, and other key investigators (if applicable) and the **overall management approach**; and
5. The realism and reasonableness of **cost**.

The Principal Criteria are of equal importance and are more important than Other Criteria. Other Criteria are of equal importance to each other. The U.S. Government does not guarantee an award in each research area. Further, be advised that as funds are limited, otherwise meritorious applications may not be funded.

B. REVIEW AND SELECTION PROCESS

The Minerva Research Initiative selects awards using merit-based competitive procedures according to 32 CFR 22.315. Preparation and submission requirements for

the two-stage proposal process are described in Section IV of this document. Evaluation processes are described below.

1. WHITE PAPERS

White papers will be reviewed by the responsible Research Area POC for the interest area and may be reviewed by one or more subject matter experts. Systems Engineering and Technical Assistance (SETA) contractor employees may provide technical and administrative assistance to the evaluation team. Individuals other than the POC will sign a conflict of interest statement prior to receiving white papers.

White papers that best fulfill the evaluation criteria will be identified by the white paper reviewers and recommended to the OSD Minerva Steering Committee. The Steering Committee is composed of representatives from the research and policy organizations within OSD and may include representatives from the DoD Military Components and/or Defense Agencies. The Minerva Steering Committee expects to invite up to thirty (30) PIs to submit full proposals. Thorough feedback on white papers will be provided to those invited to submit a full proposal. Feedback will be provided to all other proposers upon request.

2. FULL APPLICATIONS

Full applications submitted under this NFO undergo another multi-stage evaluation procedure. Technical applications will be evaluated through a peer or scientific review process. Reviewers may include Government personnel and Non-Government reviewers including 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.

Cost proposals will be evaluated by Government business professionals and support contractors. Findings of the various interest area evaluators will be forwarded to senior DoD officials who will make funding recommendations to the awarding officials. Restrictive notices notwithstanding, one or more support contractors or peers from the university community will be utilized as subject-matter-expert technical consultants. However, proposal selection and award decisions are solely the responsibility of Government personnel. Each support contractor's employees and peers from the university community having access to technical and cost proposals submitted in response to this NFO will be required to sign a non-disclosure statement prior to receipt of any proposal submission.

The recommendations of the various area POCs will be forwarded to senior officials from the OSD who will make final funding recommendations to the awarding officials based on reviews, portfolio balance interests, and funds available.

Due to the nature of the Minerva program, the reviewing officials may recommend that less than an entire Minerva proposal be selected for funding. This may be due to several reasons, such as insufficient funds, research overlap among proposals received, or potential synergies among proposals under a research interest area. In such cases, the government will discuss proposal adjustments with the applicant prior to final award.

C. ANTICIPATED AWARD ANNOUNCEMENT AND FEDERAL AWARD DATES

Event	Date	Time
Pre-Application Conference/Industry Day	TBD	TBD
Last day for White Paper questions to Interest Area POCs	6 October 2022	
White Papers Due	14 October 2022	1500 Eastern
Notification of Initial Evolutions of White Papers*	2 December 2022	
Last day for Full Application questions to Interest Area POCs	3 January 2023	
Full Applications Due	9 February 2023	1500 Eastern
Notification of Selection for Award*	30 March 2023	
Assistance Awards*	19 June 2023	
Kickoff Meeting*	24 July 2023	

*Dates are estimated as of the date this NFO is published on Grants.gov

D. HANDLING OF SELECTION INFORMATION
Generally, application information will not be disclosed to individuals outside of the evaluation process. The evaluation team will treat application information as equivalent to source selection information as defined in the Federal Acquisition Regulation (FAR) (see FAR 2.101 and FAR 3.104). Evaluation team members will be required to complete and submit a Non-Disclosure Agreement and Conflict of Interest declaration prior to receiving or handling application materials.

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. This may include representations and certifications, revised budgets or budget explanations, certificate of current cost or pricing data, subcontracting plan for small businesses, and/or other information as applicable to the proposed award.

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

B. ACCESSING GRANT AWARDS
If you require additional copies of your award, award/modification documents are available via the Department of Defense (DoD) Electronic Document Access System (EDA) within the Procurement Integrated Enterprise Environment, or PIEE (https://piee.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 PIEE, you may complete a self-registration request as a "Vendor" via https://piee.eb.mil/xhtml/unauth/registration/notice.xhtml. For detailed assistance with the registration process, visit https://piee.eb.mil/xhtml/unauth/help/help.xhtml.

To access awards after your registration has been approved, log into PIEE and select the EDA module. Select "Award Data", and then "Award Search". Enter your grant award number into the "Contract Number" field, and then select "Search".

PIEE questions may be directed to the help desk toll free at 866-618-5988, or via web form at https://piee.eb.mil/xhtml/unauth/web/homepage/vendorCustomerSupport.xhtml.

C. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS
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 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, September 2021) are located at https://www.nre.navy.mil/media/document/dod-research-terms-and-conditons-september-2021pdf. These terms and conditions are incorporated by reference in this announcement.

You 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 the preceding paragraph.

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.

D. **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.

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.

E. **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

Grants typically require annual and final technical reports, financial reports, and final patent reports. Copies of publications and presentations should be submitted in accordance with award documentation. Additional deliverables may be required based on the research being conducted.

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.

A. ANNUAL REPORTS

Submit an interim DD882 at least annually, within 60 calendar days of the end of the period of performance. Negative reports are required.

B. FINAL REPORTS

1. CLOSEOUT REPORT

Detail the full programmatic accomplishments summarized from prior reports and a forecast for ongoing program sustainability and contribution to Minerva 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 (SF425)

A final SF425 is required within 90 calendar days of the completion date for the term of any resulting grant(s) 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 any resulting grant(s).

3. INVENTION REPORT

Submit a final DD882 within 90 calendar days after the expiration of any resulting grant(s). Negative reports are required.

VIII. OTHER ADMINISTRATIVE REQUIREMENTS

Not applicable.

IX. FEDERAL CONTACTS

General questions regarding the Minerva Research Initiative should be directed to: https://minerva.defense.gov/Contact/. Many questions may also be answered at https://minerva.defense.gov/FAQ/.

Technical questions should be directed to:
Dr. Fiona Butcher
Basic Research Office
Office of the Undersecretary of Defense for Research and Engineering (OUSD(R&E))
and OUSD(Policy)
E-mail: fiona.d.butcher.fn@mail.mil

Questions regarding the application process should be directed to the Grants Officer listed on the cover page of this NFO. Regarding any resulting awards, questions should be directed to the cognizant Awarding Grants Officer (e.g., the warranted Grants Officer who signed the grant on behalf of the Federal Government). For post-award administrative issues that cannot be resolved by the Grants Officer, questions should be directed to the Administrative Grants Officer listed in the payment instructions on any resulting grant award(s).

Questions regarding the use of Grants.gov should be directed to either the toll-free telephone number (1-800-518-4726) or via E-mail to 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. You 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 NFO 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. **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.

C. **HUMAN SUBJECT RESEARCH**
You 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).

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.

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.

The following forms are required by HRPO and located under the "Related Documents" tab of this NFO 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 which will delay the start of the grant.
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.

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.

D. **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 your 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.

E. **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 Grants 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/.

F. **PROJECT MEETINGS AND REVIEWS**
Individual program reviews between the Program Office, Minerva, and the recipient 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 DoD facilities in the National Capital Region. Interim meetings are likely, but these will be accomplished via video telephone conferences, telephone conferences, or via web-based collaboration tools.

G. **SECURITY CLASSIFICATION**
OSD does not provide access to classified material under grants.

H. **ORGANIZATIONAL CONFLICTS OF INTEREST (OCI)**
All prospective proposers and proposed sub-awardees must affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any DoD or military service technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the prospective proposer supports and identify the prime grant numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest must be disclosed. The disclosure shall include

a description of the action the prospective proposer has taken or proposes to take to avoid, neutralize, or mitigate such conflict. A grantee cannot simultaneously be a SETA and a research and development performer.

Proposals that fail to fully disclose potential conflicts of interests will be rejected without technical evaluation and withdrawn from further consideration for award. For additional information regarding OCI, contact the appropriate Interest Area POCs. If a prospective proposer believes that any conflict of interest exists or may exist (whether organizational or otherwise), the prospective proposer should promptly raise the issue with the appropriate Interest Area POC by sending his/her contact information and a summary of the potential conflict by e-mail to the Federal Contacts described in Section IX, before time and effort are expended in preparing a proposal and mitigation plan. If, in the sole opinion of the Grants Officer after full consideration of the circumstances, any conflict situation cannot be effectively avoided, the proposal may be rejected without technical evaluation and withdrawn from further consideration for award under this NFO.

I. MILITARY RECRUITING
This applies to domestic U. S. colleges and universities. Appropriate language from 32 CFR 22.520, Campus access for military recruiting and Reserve Officer Training Corps (ROTC), will be incorporated in all university grant awards.

J. REPORTING EXECUTIVE COMPENSATION AND FIRST-TIER SUBAWARDS
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 subawards and executive total compensation as codified in 2 CFR 170.110. Any U.S. Institutions of Higher Education that applies for financial assistance (either grants, cooperative agreements or other transaction agreements) as either a prime or sub-recipient under this NFO must provide information in its proposal that describes the necessary processes and systems in place to comply with the reporting requirements identified in 2 CFR 170.220. This grant and any subawards are also subject to 32 CFR Part 32.

K. NDAA SECTION 889 COMPLIANCE
See Section 11 of the National Policy Article IV. Other national policy requirements. (September 2020) Section A. Cross-cutting requirements, of the DoD R&D General Terms and Conditions September 2021.

XI. SPECIFIC INFORMATION REGARDING MINERVA
A. EXPECTATIONS FOR MINERVA RESEARCHERS
1. PROJECT MEETINGS AND REVIEWS
In additional to an annual Minerva-wide program review held in the Washington, DC area, individual program reviews between the Service sponsor and the performer may be held as necessary. Program status reviews may also be held to provide a forum for reviews of the latest results from experiments and any other incremental progress toward the major demonstrations. These meetings will be

held at various sites throughout the country. For costing purposes, potential recipients should assume that 40% of these meetings will be at or near the appropriate Service Headquarters in the Washington, DC area and 60% at other contractor or government facilities. Interim meetings are likely, but these will be accomplished via video telephone conferences, telephone conferences, or via web-based collaboration tools.

2. RESEARCH OUTPUT

All Minerva research is unclassified and by Federal policy is not subjected to any restrictions on publication or participation by foreign nationals. It is expected that copies of all products emerging from Minerva-supported research, such as academic papers, will be shared with the Minerva program staff.

Publications should acknowledge Minerva Research Initiative support through language such as:
"This project was supported through the Minerva Research Initiative, in partnership with [relevant Service partner issuing grant] under grant number [award_number]." Posters and other publications should include reference to the Minerva program and/or Minerva program logo.

Over the course of the project, Minerva researchers are encouraged to produce 1000-word analytical summaries articulating the broader relevance of the findings presented in these academic papers, that could be shared within the government and/or others interested.

B. BASIC VS. APPLIED RESEARCH

Work funded under a NFO may include basic research and applied research.

As defined therein the definition of fundamental research, in a DoD contractual context, includes [research performed under] grants that are (a) funded by Research, Development, Test and Evaluation Budget Activity 1 (Basic Research), whether performed by universities or industry or (b) funded by Budget Activity 2 (Applied Research) and performed on campus at a university. The research shall not be considered fundamental in those rare and exceptional circumstances where the applied research effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the grant.

Pursuant to DoD policy, research performed under grants that are a) funded by Budget Activity 2 (Applied Research) and NOT performed on-campus at a university does not meet the definition of fundamental research. In conformance with the USD (R&E) guidance and National Security Decision Directive 189, WHS/AD will place no restriction on the conduct or reporting of unclassified fundamental research, except as otherwise required by statute, regulation, or Executive Order. For certain research projects, it may be possible that although the research being performed by the Grantee

is restricted research, a sub-awardee may be conducting fundamental research. In those cases, it is the Grantee's responsibility in the application to identify and describe the sub-awardee unclassified research and include a statement confirming that the work has been scoped, negotiated, and determined to be fundamental research according to the Grantee and research performer.

Normally, fundamental research is awarded under grants with universities. Potential prospective proposers should consult with the appropriate program Technical POCs to determine whether the proposed effort would constitute basic research or applied research. Minerva funds basic, not applied, research.

C. SPECIFIC MINERVA RESEARCH INITIATIVE TOPICS

The following Minerva topics indicate domains of inquiry relevant to the Department of Defense. Interest areas are not mutually exclusive and proposers are not limited to the questions, scope, or regions listed. Researchers should aim to balance the specificity of their proposed research with the generalizability of the expected results. The Minerva Research Initiative is particularly interested in applications that align with and support the National Defense Strategy.

In framing applications, it is important to articulate the basic science contribution of the research proposed, and how its theoretical and methodological approach is generalizable such that it could influence how similar problem sets are approached in the future. Applications that reflect basic research and engage PME students research on the strategic priorities in this document may be reviewed more favorably (See Section V for application evaluation criteria).

Applications may leverage existing data or, with justification, collect new data. Preference may be given to studies by experts capable of analyzing source material in the original languages and to studies that exploit materials that have not been previously translated. The DoD also values geospatially-referenced data across multiple geographic scales gathered in the course of research. It is expected that collecting viable empirical data relevant to context and situation may require field research, which is looked upon favorably.

Researchers are encouraged to incorporate novel research methods. Well-theorized models linking micro and macro analyses and cross-method approaches, such as simultaneously using both inductive and deductive analytic strategies, and qualitative and quantitative methods are also of interest. applications should be fundamentally rooted in the existing social science research literature and have a clear basic science component that describes the future utility of the insights the research will generate for social science.

In framing any Minerva application, it is important to articulate the basic science contribution of the research proposed. It is expected that all applications will have sufficient area and subject-matter experience to appreciate the nuances of diverse local contexts—including the (ethical) challenges posed by different value systems—and proposers are strongly encouraged to review the 2019 Future Directions in Social

Science report on the Emergence of Problem-based Interdisciplinary as a reference for the program's strong interest in supporting projects that are disciplinarily diverse and committed to addressing problems in innovative ways. It is also expected that applications utilize both qualitative and quantitative approaches and include validation strategies of the research findings and potential impacts. Further, the program is interested in how the theoretical and methodical approach of the proposed research is generalizable such that it could influence how similar problem sets are approached.

Furthermore, there is strong interest in research applications partnered with Historically Black Colleges and Universities/Minority Intuitions (HBCU/MI) and other appropriately diverse teams, such as Professional Military Education Institutions, especially as they contribute different perspectives on the social dynamics of the challenges posed below.

D.   Topic 1: Socio-economic vulnerability to climate change

POC: Fiona Butcher, OUSD-R&E Basic Research Office, Fiona.d.butcher.fn@mail.mil

Climate and environmental change is increasingly accepted as a major issue facing societies, and a defining global challenge with significant potential to reshape future security and stability. As outlined in the DoD Climate Risk Analysis Report (2021) the associated risks include mass migration, altered patterns of infectious disease, water and food insecurity, degraded livelihood systems, political instability, global conflict, and social discohesion, as well as adverse effects on key economic sectors. The varying pace that developed and emerging economies can develop and implement climate change policies, may also be a consideration for political activism and national security.

Socio-economic impacts of climate change will vary across spatial scales, with some societies less resilient to climate-related shocks. Socio-economic factors that determine a region's adaptive capacity can include technology and infrastructure, information, knowledge and skills, institutions, equity, social capital, and economic development. Developing nations are sometimes considered more vulnerable because of relatively high dependence on climate-sensitive sectors, low incomes, and weak adaptive capacity.

This Minerva topic seeks to develop new approaches to studying dynamic relationships between climate change impacts and socio-economic systems, and to assess the implications of those relationships for national security and future Defense policy. Ideally, data and models will capture longitudinal relationships and identify potential policy considerations. Questions of interest for this topic could include:

- What are the relationships between climate change, the performance of economic institutions and critical economic sectors, and national security? How are different types of economic systems affected by the social and political responses environmental change?

- How have state actors exploited environmental vulnerabilities or crises for coercive means, and what lessons can we draw for a world of increasing climate-related hazards?
- How do we measure the impacts of climate change on the value of ecosystem services across different levels of society, and how will these impacts affect different aspects of national security?
- How does the nature of economic interdependence (or isolation) affect the management of environmental challenges across various geographic and political-economic scales? Are there
- How can emerging technologies help to mitigate the negative socio-economic impacts of climate change? How does this vary across different societies? Where might these opportunities intersect with existing DoD technology programs?

E. Topic 2: Deterrence in the Future Operating Environment

POC: Fiona Butcher, OUSD-R&E Basic Research Office, Fiona.d.butcher.fn@mail.mil

Integrated deterrence is at the center of the forthcoming 2022 National Defense Strategy and entails working seamlessly across warfighting domains, theaters, the spectrum of conflict, other instruments of U.S. national power, and America's network of Alliances and partnerships.

This topic focuses on predictive models of deterrence and/or escalation management strategies and seeks to develop understanding on whether generalized theories allow lessons learned in one global region to be applied to another region. Theories that enable causality or forecasting between strategic action and outcome are also sought. Specific areas of interest include deterrence logic for hostile states, non-states and proxy actors. A multidisciplinary approach to generating new theories and methodologies is needed, as well as an emphasis on empirically tested or theoretically founded strategic decision support tools.

Specific foci may include, but are not limited to:
- How do different deterrence logics apply across a range of circumstances and domains?
- What are the perspectives of deterrence across different government agencies, allies and partners? Where and why can perspectives be misaligned or deviate? How can we better understand and measure the effects of assurance on partner's and allies' defense policies?
- How do we understand competitors' perceptions of military and non-military signals, and integration of multiple sources of information, messaging and other gray zone activities?
- Scientific evidence to understand how a potential adversaries' domestic political considerations can influence decision-making on the use of force.

- How can historical lessons on successes and failures of coordination between diplomatic and military strategies inform the development of future deterrence strategies?
- How can the deterrence effects of diplomatic, informational, military and economic activities be measured and assessed?
- How does perceived or realized resource competition influence thinking about escalation and deterrence?
- How does technology (current and emerging) impact traditional deterrence thinking and does it do so differently across different domains?
- Theory and empirical evidence to understand the deterrence effects of revealing or concealing capabilities in different technological and strategic contexts.
- What are the implications of cyber and space-related technologies for general and immediate deterrence, and nuclear escalation risks?
- Empirical evidence to understand nuclear-escalation risk in immediate deterrence crises and early stages of armed conflict.
- How can deterrence thresholds be set, and how can these be effectively communicated to potential opponents?
- How can deterrence strategic outcomes be assessed as well as account for outcomes connected to unrelated events and circumstances?
- What are the approaches for validating causal dynamics between specific deterrence strategies and outcomes?
- For deterrence drivers, what observables can be used to determine if actions are effective across multiple domains? How can they help predict second and third order consequences of these deterrence drivers?
- Scientific evidence to understand how to identify the *what* and *where* to increase defense resilience in order to strengthen deterrence.

F.   Topic 3: Russian Speakers in Online Spaces

POC: Rebecca Goolsby, Office of Naval Research, rebecca.goolsby@navy.mil

Russian-speaking diasporas and populations express their opinions, viewpoints and knowledge about social, economic and political affairs in social media, though these discourses are difficult to locate (using current methods) and difficult to interpret, given the problem of language and cultures. Russian speakers have a significant global reach and online users occupy many platforms, including platforms rarely studied for example, Vkontakte and OdnoKlassnik, as well as more popular platforms such as YouTube. Recent events in Ukraine are capable of causing substantive ripples in Russian popular culture as expressed in digital and social media; and information conflicts with the propaganda efforts of the Russian media complex of state-owned and state-dominated platforms.

An important feature of information conflicts online is the implicit difficulty of controlling counter-narratives in online spaces. This effort should aim to characterize the landscape of stance, opinions and themes and the techniques of influence in Russian-language discourses, such as the role of trolling and its techniques, the use of disinformation and propaganda, and the social networks and communities that both support and resist state narratives. Implicit in this effort would be an exploration of modern Russian youth culture and the efforts by the Russian state to contain their opinions and perspectives. The successful effort would provide important, breakthrough understandings of online influence, particularly as practiced by determined propagandists in new (Tiktok), legacy (Facebook, Twitter) and language-niched spaces (Vkontakte, OrdnoKlassnik) or similar.

Respondents should have cultural expertise in Russian language, and in the social platforms where narratives are propagated. Expertise in social movement theory, influence theory, and media criticism would be helpful and expected. A strong understanding of social media algorithmic manipulation and its application to common Russian social media platforms is also likely to be helpful. "Culture-at-a-distance" techniques to study the Ukrainian war in particular would be advantageous. Researchers in communications, journalism, sociology, anthropology, social psychology, and Russian studies are encouraged to apply. Expertise in social media on a variety of platforms such as Tiktok, Vkontakte, OdnoKlassnik and other social media platforms is expected so that information scientists and computer scientists with appropriate social science background and experience are also encouraged.

This Minerva topic aims to expand the description of advanced information warfare techniques and maneuvers and provide an understanding of adversarial disinformation architectures, methods and techniques. The research should contribute to strategic information environment assessment, providing insights, metrics, and descriptions that will inform the development of new theories of information warfare in online contexts.

Specific areas of interest include:

- Improved scientific understanding of techniques and methods of propaganda targeted at Russian speakers, particularly in online spaces.
- New metrics to measure effectiveness of competitive narratives that offer an alternative to Russian narratives.
- Improved scientific understanding of how to identify and assess coordinated attempts to influence populations through intermediaries.
- Descriptive models that assess the expected outcomes of Russian online propaganda techniques.
- New methods that measure the behavioral effects of online propaganda on Russian speaking populations.

G.   Topic 4: Power and Influence in the Era of Strategic Competition

POC: Laura Steckman, Air Force Office of Scientific Research,
laura.steckman.1@us.af.mil

Power and influence are prevalent social science terms, and they often overlap/intersect in their application to relationships between/among individual(s) and group(s) that often extend to other, sometimes larger, systemic socio-political, economic, and/or legal relationships. While the concepts of power and influence are ancient, the definitions and usage of these terms have shifted over time to reflect the changing nature of governance, warfare, technology, and even the international order. The historical philosophical bases for these concepts, at least from a Western lens, date back at least to Aristotle in written format, and despite healthy debate and growth, the succeeding literature has often maintained a pro-Western bias that has, perhaps unintentionally, limited the amount of non-Western perspectives that contributed to the scholarship. While translation and other dissemination issues may be compounding factors, the lack of available non-Western or decolonized conceptualizations complicates comparisons and assessments of how other nations and/or subnational groups utilize these concepts in ways that might be less visible or even invisible to the West. Historically, for example, power has been considered finite in some parts of the world, with losses or gains transferred through land, property, or other exchange and then perpetuated through societal memory to cement one person/group benefiting over another. In contrast, the rags-to-riches genre suggests that power can be gained and lost in other parts of the world, albeit not necessarily at a cost to another person or entity.

Social media has introduced more fluid concepts of power that permit individuals to become "influencers," although the magnitude of this trend may vary across societies. The existence of technology-enabled influence is hardly novel, but how critical is the role of technology in establishing power and asserting influence? The extent to which technology has altered or redefined power and influence in policy and practice is underexplored and has potential implications for national security and deterrence. It seems plausible that technology would augment power and influence to some degree, yet it is unknown whether it could become a standalone lever. Should or could technology equate to a lever of national power or as a component thereto are open questions, and technology may not be alone as a potential lever or component thereto; there may be additional elements that merit further consideration in the context of power and influence.

To further situate one relevant historical evolution of power and influence, British diplomat and historian Edward Carr produced a framework for national power in 1939. He described political power as being the sum of military power, economic power, and power over [public] opinion. This model later transitioned to DIME (Diplomacy, Information, Military, Economy) at the start of the Cold War and, through the counterterrorism community in the early 2000s, evolved to DIMEFIL, MIDLIFE, MIDFIELD, and other derivative acronyms to analyze and craft policy. In today's era of strategic competition, a time that is still redefining itself in terms of interconnectedness,

ideology, and geopolitical recalibration, some researchers have started to consider whether other instruments of power may exist, and how they affect an actor's ability to exert or succumb to influence. Other potential instruments range from technology to economics, education, culture, [outer] space, etc., and explore what threshold an instrument must reach, whether instruments should be weighted the same and, if not, what circumstances require redistributed weighting. Interrogating these models and addressing any deficiencies is only part of the issue, however, as other nations, subnational groups, and international organizations may conceive power and influence differently. Thus, there may be multiple entities playing by different rules who translate alternative concepts into levers that increase their international power projection capabilities.

This topic seeks research that, at minimum, interrogates the concepts of power and influence from multiple perspectives, identifies similarities and differences where they are present, and considers the implications of these findings. Further, the topic seeks efforts that develop and test models related to national levers of power and influence, from Western and non-Western perspectives, with consideration for determining which model(s) best align with the era—and evolution—of strategic competition.

Suggested empirical questions:

- How do concepts such as power and influence differ by nation and, when relevant, entity? To what extent are definitions from Western and non-Western perspectives comparable? If they vary, what are the gaps between/among them? What opportunities might these differences reveal?
- What role does technology play in current and/or emerging levers of national power? If it can stand alone, what implications does it have for current and future policy? If not, what are the dependencies?
- What is the threshold for a concept or capability to become a lever of national power? If there is a threshold, do the traditional instruments still exceed it? What emerging instruments meet or exceed it? To what extent can entities influence this threshold or instantiate/neutralize a lever?
- Should instruments of power be weighted, and if so, how? What role might context (e.g. global, local, cultural, societal, etc.) play in changing or maintaining a proposed weighting system?
- With the many types of power, such as hard, soft, smart, sharp, etc. but may not be exhaustive, which of these types are equivalent across [sub]national definitions? Different? Which actors may use other, as yet unidentified, types of power? What implications do these findings have for integrated deterrence, which must consider influence across multiple domains and the spectrum of conflict?
- To what extent are nations and entities using the same levers? If they conceive power and/or influence differently, what are the similarities and differences, or how might they be identified?

- How do differences in power and influence inform concepts such as surprise and deterrence? Once understood, how do they enrich and/or complicate emerging understanding? To what extent might they differ in specific domains, such as space and cyber?
- What indication(s) may exist to suggest that an action will/will not occur based on another actor's definitions of power and/or influence?
- How do new levers, should they be identified, translate into emerging international power projection capabilities?
- What framework(s) and/or model(s) most accurately reflect power and influence in strategic competition? What extensions, if any, are needed to consider it holistically and across multiple domains? How can these concepts be measured?

H.   Topic 5: The Arctic as a Polar Crossroads

POC: Laura Steckman, Air Force Office of Scientific Research,
laura.steckman.1@us.af.mil

The Artic is growing in its geostrategic and geopolitical importance. The region is comprised of multinational actors to include the Arctic states, indigenous peoples and their organizations, many of which are recognized sovereign nations, and international observers, many of whom have no geographic proximity to the region, at a time when it is experiencing increasing socio-economic, governmental, environmental, and international pressures that make the region a "polar crossroads of globalization, commodity extraction, and environmental protection/degradation" (Moscato, 2020). It is also becoming more interconnected with [outer] Space for reasons of security, communications, astronomy, and meteorology, among others, adding additional complexity to its importance as a geographic region. At the same time, as the region experiences change it is opening, allowing for new industries such as increased tourism that economically enhance and environmentally challenge the region with greater human mobility. In addition, retreating sea ice and glaciers are creating new passageways for transportation and shipping, yet also increasing negative impacts, such as pollution, that will cause further ecological impact to marine environments. Taking all of these factors into account, it becomes clear that humans are fundamental actors at these crossroads. Humans are critical agents who simultaneously drive and experience the effects of change, whether these changes occur from climate change, environmental transformation, technology… or to culture, security, and sustainability. The presumed opening of the Arctic, as well as growing global interest in its lands and resources, will undoubtedly continue to introduce opportunities and tensions.

Strikingly, despite the immense role that people have in and on the Arctic, as acknowledged in Arctic policies and actors, such as those of the Arctic Council, that reference the human dimension, peoples, and communities; governance; and indigenous knowledge and rights; social science research is substantially under-supported compared to the natural and physical sciences. Several recent analyses on the breadth of Arctic

research confirm the need for social and multidisciplinary research on the region to understand the issues affecting it. Such studies are of particular importance to security and defense. The 2021 US Interim Nation Security Strategy calls to "promote a favorable distribution of power to deter and prevent adversaries from directly threatening the United States and our allies, inhibiting access to the global commons, or dominating key regions" and "lead and sustain a stable and open international system, underwritten by strong democratic alliances, partnerships, multilateral institutions, and rules." There is a need to understand the humans and activities directing and affecting the future of the crossroads that drive [un]intentional change and how the transformations occurring in the region are shaping the lives and futures of Arctic peoples, states, and global interests.

This topic seeks research that explores the opportunities and challenges in the Arctic that stem from multiple, simultaneous realities such as a changing physical and ecological environment, increasing access and human activity, introduction and adoption of new technologies, and evolving strategic competition. All research proposed must, to some degree, address the human dimension of the Arctic. Proposers anticipating fieldwork in indigenous territories are strongly encouraged to provide evidence in the technical narrative and/or letters of support to demonstrate local concurrence for and/or partnering in the research.

Specific areas of interest include:
- Cooperation and competition in the Arctic, e.g. how these activities may be occurring simultaneously among actors, the mechanisms that affect cooperation and competition, modeling and/or predicting current and future trends
- Opportunities and challenges to developing culturally-appropriately regional digital infrastructure and digital security, which may include consideration for new technologies that could introduce additional societal disruption(s), resiliencies, and vulnerabilities across the region
- Factors that affect mutual understanding and cooperation in the region, to include consideration for local peoples and/or regional and international influence
- Impact of societal change due to trends in development, climate and environmental stressors, international interests, and increasing human activity

Moscato, D. (2020). The Amplification of Polar Diplomacy: A Textual Analysis of Arctic Council Declarations. Arctic Yearbook, 1-14.

I.   Topic 6: Management and Information in the Defense Environment

POC: Fiona Butcher, OUSD-R&E Basic Research Office, Fiona.d.butcher.fn@mail.mil

This topic evolves out of the Department's emphasis on Defense Reform as a pillar of the National Defense Strategy, the continual identification of DoD management activities on the GAO's High Risk List, and the 2018 Future Directions Workshop on the intersection of Management and Information Sciences and it's corresponding report on the Emerging Sciences

[and Their Applicability to DoD R&D Management Challenges](#). Management science and information science emerged in response to particular organizational needs: management science to the global scale of military and industrial global operations and information science to the growing presence/influence of digital data in contemporary society. Each of these two sciences afford rich opportunities to fundamentally understand and provide insights into management and information challenges facing DoD as it seeks to modernize and reform its management and business practices, and make better use of its management data collection and analysis capabilities. This topic seeks to explore how management and information science can contribute to understanding organizational structures and the challenges to and opportunities in efforts to modernize DoD management, scientific, and bureaucratic processes and ecosystems. Research activities will also help elucidate what data sets and sources should be made available to researchers by the DoD to support further constructive engagement with the management science and information science academic community.

Motivating research questions and issues that can be addressed include, but are not limited to:

Organizational Change and Development
- Develop models that take into account the need for strategy formulation, not just strategy execution; the challenge presented by multiple stakeholders without a unified overarching hierarchy; the multiplicity of interests involved in any prospective change; the accelerating and highly variable rates of technological and social change; challenge of organizationally incentivizing collective interests over more narrowly-defined interests; etc.
- Develop sophisticated theory and models to guide the transformation of institutions into agile organizations that enable rapid adaptation of policies, priorities, and investment to maintain competitive advantage;
- How can we better understand cultural change and development, across a multigenerational workforce operating in the DoD hierarchy?
- How can we best mitigate risk aversion in complex, bureaucratic organizations such as the DoD?
- How can a "systems of systems" architecture be developed—and data be aggregated— that facilitates portfolio management beyond the program level; enhances Joint Force, Service, and OSD coordination and cooperation; assists the transition of research insights across the Department; etc.
- How can the DoD assess costs and impact with imperfect information, particularly as it relates to evaluating institutional inertia relative to the challenges of managing risk in an ever-evolving research and operational environment?
- How can the DoD maintain the current structure and processes needed for addressing current operational challenges while concurrently experimenting with developing alternative structures and processes needed for emerging operational challenges?
- How can the DoD measure the warfighting advantage provided by the department's diversity and inclusion policies?

Research and Development Pipeline
- Identify alternative frameworks to the current linear progression of research to understand the reciprocal relationship between the different research activities (Basic, Applied), Development, and Application to understand the development life-cycle, resource requirements, and DoD stakeholders;

- Develop advanced models accounting for current federal government and industry R&D activities to create for DoD a diversified R&D research portfolio that will inform investment prioritization (lead versus support) and level (amount).
- How can planning, budgeting, and financial management policies be tailored to match the speed needed to counter emerging threats and take advantage of new technological opportunities?

Supply Chain Management
- What approaches can enable the DoD to identify fair pricing in acquisition circumstances where there is only one prime contractor and only one customer? What are the best models to establish a fair price in the absence of a true market? How can DoD identify fair prices for weapons systems and capabilities that are intended to have a deterrent effect and not intended for operational use?
- How can we anticipate and address the erosion or complete collapse of a sub-tier capability in the supply chain? How can we assess what supply chain logistics reform is needed?
- How can we model the department's supply chain human resources and manufacturing capacity needs? What approaches can enable the DoD to assess the Science, Technology, Engineering and Mathematics (STEM) talent pipeline and national and global ecosystem?
- How can we better understand and assess trust in the sociotechnical supply chain system?