

W911NF-23-S-0010

SOURCES SOUGHT NOTICE

REQUEST FOR WHITE PAPERS

BAA TOPIC II A.2-.c.ii: TEAM STAFFING AND COMPOSITION

“Computational Modeling for Team-Based Assignment”

INTRODUCTION

Broad Agency Announcement (BAA) W911NF-23-S-0010 was publicized on SAM.gov and [Grants.gov](https://www.grants.gov) on 30 May 2023. This Sources Sought Notice calls for White Paper submissions in reference to the BAA Topic II A.2.c.ii: TEAM STAFFING AND COMPOSITION. The United States Army Research Institute for the Behavioral and Social Sciences (ARI) Broad Agency announcement W911NF-23-S-0010, issued under the provisions of paragraph 6.102(d)(2) of the Federal Acquisition Regulation, provides for the competitive selection of basic and applied research and that part of development not related to the development of a specific system or hardware procurement. A Proposal submitted in response to this BAA and selected for award is considered to be the result of full and open competition and in full compliance with the provisions of Public Law 98-369, “The Competition in Contracting Act of 1984,” and subsequent amendments. Funding of research and development (R&D) within ARI areas of interest will be determined by funding constraints and priorities set during each budget cycle. Any award related to the submission of a White Paper and subsequent Proposal requested by this Notice is subject to funds availability and priorities. ARI may choose not to select any new award due to unavailability of funds or other factors.

The sequence of steps leading to an award is:

- 1) Request for White Paper initiated by ARI through this Sources Sought Notice
- 2) Submission of a timely White Paper **no more than six pages in length (one page is the cover page)** to the POC for the U.S. Army Contracting Command, wilveria.a.sanders.civ@army.mil, and copy furnish (CC) the ARI Technical Point of Contact (TPOC), jessica.b.darrow.civ@army.mil.
- 3) The ARI will provide written or telephonic feedback for whitepapers submitted and will provide a response with either “encouraged to submit a proposal” or “not encouraged to submit a proposal”. as per established criteria presented in Part III.
- 4) If the White Paper merits it, a request of a formal proposal initiated by ARI
- 5) Submission of a timely, formal proposal
- 6) Evaluation of the formal proposal as per established criteria presented in Part III
- 7) Award for selected proposal based on availability of funds or other factors

This sequence allows earliest determination of the potential for funding and minimizes the labor and cost associated with submission of a full proposal that has minimal probability of being selected for funding. Note that an interested Applicant **must** submit a White Paper electronically in order to be eligible to

submit a formal proposal under this Notice. This Notice requires that a White Paper be submitted electronically no later than **30 June 2023, 5:00 PM Eastern Daylight Time**. See Part V, Deadlines, for additional details. BAA W911NF-23-S-0010 allows several potential instrument types (e.g., contract, grant, cooperative agreement) to result from a successful proposal. For this Notice, the intention of the Government is to award a contract.

THOSE SUBMITTING A WHITE PAPER/PROPOSAL ARE CAUTIONED THAT ONLY A GOVERNMENT CONTRACTING OR GRANTS OFFICER CAN OBLIGATE THE GOVERNMENT THROUGH AWARD OF A LEGAL INSTRUMENT INVOLVING EXPENDITURE OF GOVERNMENT FUNDS.

This Sources Sought Notice for a Requested White Paper consists of seven parts as follows:

- Part I: Research and Development Interests of the Requested White Paper
- Part II: Preparation and Submission
- Part III: Evaluation Criteria
- Part IV: Feedback
- Part V: Deadlines
- Part VI: Inquiries
- Part VII: References

ACC (APG) RTP Agency Point of Contact:

The POC for the US Army Contracting Command (Aberdeen Proving Ground) Research Triangle Park Division is: Ms. Wilveria Sanders, (919) 549-4328, wilveria.a.sanders.civ@army.mil.

ARI Agency Point of Contact:

The ARI POC for technical matters for this White Paper topic is: Dr. Jessica Darrow, (703) 819-1017, jessica.b.darrow.civ@army.mil.

I. RESEARCH AND DEVELOPMENT INTERESTS OF THE REQUESTED WHITE PAPER:

The United States Army Research Institute for the Behavioral and Social Sciences is the Army's lead agency for the conduct of research, development, and analyses for Army readiness and performance via research advances and applications of the behavioral and social sciences that address personnel, organization, training, and leader development issues. ARI contracts with educational institutions, non-profit organizations, and private industry for research and development (R&D) in different areas, including the areas specifically identified in Section II - A W911NF-23-S-0010. Efforts funded under this White Paper request will only include Applied Research and/or Advanced Technology Development.

Applied Research provides a systematic expansion and application of knowledge to design and develop useful strategies, techniques, methods, tests, or measures that provide the means to meet a recognized and specific Army need. Applied Research precedes system specific technology investigations or

development, but it should have a high potential to transition into the Advanced Technology Development (ATD) Program.

The ARI ATD Program includes the development of technologies, components, or prototypes that can be tested in field experiments and/or simulated environments. Projects in this category have a direct relevance to identified military needs. These projects should demonstrate the general military utility or cost reduction potential of technology in the areas of personnel selection, assignment, and retention; training strategies and techniques; leader education and development; performance measurement; and team and inter-organizational mission effectiveness. These projects should be focused on a more direct operational benefit and if successful, the technology should be available for transition.

WHITE PAPER TOPIC: Computational Modeling for Team-Based Assignment

In a recent action plan to prioritize people and teams, the Secretary of the Army, the Chief of Staff of the Army, and the Sergeant Major of the Army noted that the Army is composed of teams of teams and argued that the Army's success depends on composing competent, cohesive, and resilient teams (Grinston et al., 2020). In support of this emphasis on assembling strong teams, the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is conducting research to develop team-based assignment frameworks to better understand the ways in which team staffing decisions can improve team functioning and performance. A critical aspect of achieving competent, cohesive, and resilient teams is to appropriately measure and model the impact of team composition on important team-level outcomes. However, addressing this research topic solely through traditional methods may not be the most feasible or efficient approach. Collecting data directly from Army teams is costly and time intensive. The statistical power required for team-level research necessitates significantly large numbers of individual Soldiers nested within teams to achieve the necessary sample size. Moreover, collecting data can create undue burden on units in the time required to collect the data as well as in the unit resources required to organize data collection.

A powerful alternative is computational modeling, which allows complex team issues to be researched without the limitations of more traditional measurement approaches. Computational modeling allows researchers to mathematically simulate theories to explore the implications of the theory and make predictions (Weinhardt & Vancouver, 2012). This technique is useful for “understanding systems with dynamic variables and in facilitating prediction regarding the behavior of these types of systems” (Vancouver & Weinhardt, 2012). Organizational researchers have demonstrated the utility of using computational modeling to study team-level emergent phenomena (e.g., Kozlowski et al., 2013, 2016). This approach could be particularly beneficial for studying team composition and effectiveness because it allows researchers to simulate these theories without collecting large amounts of data. Computational modeling has the potential to leverage team composition and effectiveness theories to better understand the implications of team staffing decisions in dynamic systems.

The purpose of this project is to develop and validate computational approaches to the problem of team composition. Specifically, the approach should yield a tool that can optimize team composition with respect to team effectiveness (e.g., tangible outcomes and emergent states). The tool should also be driven by extant team research literature and be explicitly multi-level.

The model or models underlying the tool may include, but are not limited to, network-based approaches, agent-based models, neural networks, or genetic algorithms. In addition, the tool must be useable by team researchers without an advanced knowledge of modeling and simulation. It must also be scalable and not be so large that it cannot be used on Army networks. The tool should minimize the “black box” nature of simulation and be transparent in its conclusions and how they were reached. The tool should allow user control over model parameters, permitting the user to see how changes in parameters affect outcomes.

Finally, the tool should include functionality and guidance for the user to add additional factors to the model.

OBJECTIVES

In order to meet the research objectives under this request:

- 1) The Offeror shall describe the methods that they will use to identify a theory upon which to base the model and determine data requirements.

A successful White Paper response will:

- a. Demonstrate understanding of team effectiveness factors that are relevant to the Army.
- 2) The Offeror shall describe the methods that they will use to develop, evaluate, and validate a proof-of-concept computational model for team composition.

A successful White Paper response will:

- a. Demonstrate expertise in both the social sciences and computer science.
- 3) The Offeror shall describe the methods that they will use to develop a tool and guidebook based on the prototype model.

A successful White Paper response will:

- a. Consider the audience that is likely to use the tool.

The award will be a 36-month period of performance (12-month base period and two 12-month option periods) with a budget not to exceed \$910,000.00.

The Army Contracting Command- Aberdeen Proving Ground, RTP Division has the authority to award a variety of instruments, to include contracts, grants, and cooperative agreements. The ACC (APG) RTP Division reserves the right to use the type of instrument most appropriate for the effort proposed (contract, cooperative, or grant).

II. PREPARATION AND SUBMISSION OF A WHITE PAPER:

Preparation of White Paper

A White Paper should focus on describing details of the proposed research for both the base and if applicable, option (s) approach, including how it is innovative and how it could substantially advance the state of the science. Army relevance and potential impact should also be described, as well as an estimate of total cost for both the base and option approach. White Papers should present the effort in sufficient detail to allow evaluation of the concept's technical merit and its potential contributions to the Army mission.

A White Paper must be limited to six (6) pages (page one is the cover page) and an addendum in which the Applicant must include a biographical sketch (up to 300 words per individual) of all key personnel (i.e., Principal Investigators and Co-Principal Investigators) who will perform the

research, highlighting their qualifications and experience as discussed below. All files and forms must be compiled into a single PDF file or MS Word document before submitting. Reviewers will be advised that they are only to review the cover page and up to five pages plus the addendum. Any pages submitted in excess of the six (6) page limit will not be reviewed or evaluated.

TECHNICAL INFORMATION FOR A WHITE PAPERS:

1. Technical Approach: A detailed discussion of the effort's scientific research objectives, approach, relationship to similar research, level of effort, and estimated total cost; include the nature and extent of the anticipated results, and if known, the manner in which the work will contribute to the accomplishment of the Army's mission related to this request and how this would be demonstrated.
2. Requests for Government Support: The type of support, if any that the Applicant requests of the Government (such as facilities, equipment, demonstration sites, test ranges, software, personnel or materials) shall be identified as Government Furnished Equipment (GFE), Government Furnished Information (GFI), Government Furnished Property (GFP), or Government Furnished Data (GFD). The Applicant shall indicate any Government coordination that may be required for obtaining equipment or facilities necessary to perform any simulations or exercises that would demonstrate the proposed capability.
3. Key Personnel Biographical Information: As an addendum to the White Paper, the Applicant must include a biographical sketch (up to 300 words per individual) of all key personnel (i.e., Principal Investigators and Co-Principal Investigators) who will perform the research, highlighting their qualifications and experience.

RESTRICTIVE MARKINGS ON WHITE PAPERS:

1. The Applicant must identify any proprietary data the Applicant intends to be used only by the Government. The Applicant must also identify any technical data or computer software contained in the White Paper that is to be treated by the Government as limited rights or restricted rights respectively. In the absence of such identification, the Government will assume to have unlimited rights to all technical data or computer software presented in the White Paper. Records or data bearing a restrictive legend may be included in the White Paper, but must be clearly marked. It is the intent of the Army to treat all White Papers as procurement sensitive information before the award and to disclose their contents only to Government employees or designated support contractors for the purpose of procurement related activities only. Classified, sensitive, or critical information on technologies should not be included in a White Paper.
2. An Applicant is cautioned that portions of White Papers may be subject to release under terms of the Freedom of Information Act, 5 U.S.C. 552, as amended.

Submission of White Paper

White Papers must be submitted by e-mail to the POC for the U.S. Army Contracting Command, wilveria.a.sanders.civ@army.mil, and cc'd to the ARI Point of Contact (POC), jessica.b.darrow.civ@army.mil, in electronic MS Word document format or PDF file format. **Cite "ARI BAA W911NF-23-S-0010, Computational Modeling for Team-Based Assignment" in the e-mail subject line.**

III. EVALUATION CRITERIA:

A White Papers and full Proposals received in response to this request will be evaluated by the ARI designated point of contact identified in this request using the following factors/criteria:

1. Scientific and Technical Merit- The overall scientific and/or technical merits of the proposed research.
2. Potential Contribution- The potential contributions to ARI's mission.
3. Qualifications/Capabilities- Proposed principal investigator and key personnel qualifications, capabilities, related experience, and techniques and also institutional resources and facilities.
4. Cost- Addresses the level of support requested. Will be considered for realism, affordability, and appropriateness, and may be grounds for rejection independent of evaluation on other factors

The request for a proposal will be made based on the overall evaluation of a White Paper using the four criteria listed above. The overall scientific and/or technical merit of the proposed approach will be weighted more strongly than all of the other non-cost factors combined. All evaluation factors/criteria other than cost, when combined, are significantly more important than cost or price. A request for proposal may not necessarily be made to the lowest proposed price. During the evaluation of White Papers, ARI's POC for technical matters may request a telecon with an Applicant, but telecons are not guaranteed nor required for competition and award purposes. ARI's POC for technical matters reserves the right to evaluate a White Paper and request a proposal without discussions. The Applicant's initial submission should contain the Applicant's best terms from a technical and price standpoint. Once a full proposal has been requested, all communications must go through the POC for the U.S. Army Contracting Command.

If the White Paper evaluation results in the request and submission of a full proposal, the proposal will be evaluated by a panel of scientific peers using the same factors/criteria as those listed above under Evaluation Criteria. A request for a full proposal does not guarantee an award. The decision to award will be based on feedback from the panel, considerations presented by ARI's POC for technical matters identified in this document, and other factors like budgetary constraints. ARI may choose not to select any award due to unavailability of funds or other factors.

IV. FEEDBACK:

Written or telephonic feedback will be provided to the Applicant regarding the White Paper's scientific merit and potential contributions to the ARI's mission. If the Government decides to request a full proposal, a written request will be sent to the Applicant. The Written Request will, at a minimum, invite a full proposal. The request may also include feedback intended to improve the proposal's potential for award.

V. DEADLINES:

Electronic versions of the White Paper must be received by the POC for the U.S. Army Contracting Command and the ARI POC, with e-mail subject line "**ARI BAA W911NF-23-S-0010, Computational Modeling for Team-Based Assignment**" by e-mail no later than **5:00 PM Eastern Daylight Time on 30 June 2023**. Any extension to the White Paper submission deadline will be posted to SAM.gov and Grants.gov an amendment to this Notice. Note that a timely White Paper received under this Notice will be evaluated and considered for proposal requests throughout the period beginning **30 May 2023**, and ending **30 June 2023**. **An extension of this timeline may be granted based on the number of White Papers submitted or other factors out of the control of the designated point of contact reviewing the**

White Papers. An Applicant will be notified by email if the White Paper evaluation timeline is extended beyond 30 June 2023.

Please refer to the BAA, W911NF-23-S-0010 for instructions for the submission of a full Proposal.

An Applicant is responsible for submitting an electronic White Paper or full proposal so as to be received and accepted at the Government site indicated in this Notice no later than the date and time specified above. When sending electronic files, an Applicant shall account for potential delays in file transfer from the originator's computer to the Government website/computer server. An Applicant is encouraged to submit their response early (48 hours if possible) to avoid potential file transfer delays due to high demand or problems encountered in the course of submission.

An Applicant should receive confirmation of delivery at the Government site, not just successful relay from the Applicant's system. Acceptable evidence to establish the time of receipt at the Government site includes documentary and electronic evidence of receipt maintained by the Government site. All submissions shall be submitted before the deadline identified above in order to be considered – no exceptions.

If an emergency or unanticipated event interrupts normal Government processes so that a White Paper or full proposal cannot be received at the site designated for receipt by the date and time specified above, then the date and time specified for receipt will be deemed to be extended to the same day and time specified in this Notice on the first work day on which normal Government processes resume.

An Applicant agrees to hold the terms of their White Paper and any subsequent proposal valid for 180 calendar days from the date of submission.

VI. INQUIRIES:

ACC (APG) RTP Agency Point of Contact (Contractual Questions)

The POC for the US Army Contracting Command (Aberdeen Proving Ground) Research Triangle Park Division is: Ms. Wilveria Sanders, (919) 549-4328, wilveria.a.sanders.civ@army.mil.

ARI Agency Point of Contact (Technical Questions)

The ARI POC for technical matters for this White Paper topic is: Dr. Jessica Darrow, (703) 819-1017, jessica.b.darrow.civ@army.mil.

VII. REFERENCES:

Grinston, M. A., McConville, J. C., & McCarthy, R. D. (2020). *Action Plan to Prioritize People and Teams*. https://www.army.mil/article/239837/action_plan_to_prioritize_people_and_teams

Kozlowski, S. W., Chao, G. T., Grand, J. A., Braun, M. T., & Kuljanin, G. (2013). Advancing multilevel research design: Capturing the dynamics of emergence. *Organizational research methods*, 16(4), 581-615.

- Kozlowski, S. W., Chao, G. T., Grand, J. A., Braun, M. T., & Kuljanin, G. (2016). Capturing the multilevel dynamics of emergence: Computational modeling, simulation, and virtual experimentation. *Organizational Psychology Review*, 6(1), 3-33.
- Vancouver, J. B., & Weinhardt, J. M. (2012). Modeling the mind and the milieu: Computational modeling for micro-level organizational researchers. *Organizational Research Methods*, 15(4), 602-623.
- Weinhardt, J. M., & Vancouver, J. B. (2012). Computational models and organizational psychology: Opportunities abound. *Organizational Psychology Review*, 2(4), 267-292.