Broad Agency Announcement

Robotic Autonomy in Complex Environments with Resiliency – Simulation (RACER-Sim)

Tactical Technology Office

HR001121S0005

November 30, 2020

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PART I: OVERVIEW INFORMATION

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Tactical Technology Office (TTO)
- **Funding Opportunity Title** – Robotic Autonomy in Complex Environments with Resiliency - Simulation Technologies (RACER-Sim)
- **Announcement Type** – Initial Announcement
- **Funding Opportunity Number** – HR001121S0005
- **Catalog of Federal Domestic Assistance Numbers (CFDA)** – 12.910 Research and Technology Development
- **Dates**
  - Posting Date: December 8, 2020
  - Abstract Due Date and Time: January 8, 2021, 4:00pm Eastern Time
  - FAQ/Questions Due Date and Time: January 21, 2021, 4:00pm Eastern Time
  - Proposal Due Date and Time: February 11, 2021, 4:00pm Eastern Time
- **Concise description of the funding opportunity** – The goal of the Robotic Autonomy in Complex Environments with Resiliency – Simulation (RACER-Sim) program is to advance a broad range of simulation technologies related to off-road autonomy with the goal of significantly reducing the cost of off-road autonomy development and/or bridging the gap from simulation to the real world. Simulation technologies in the areas of simulation-based off-road autonomy algorithm development, simulation environment technologies, and simulation content generation are of particular interest.
- **Total amount anticipated to be awarded** – The anticipated total Phase 1 budget is approximately $6 million.
- **Anticipated individual awards** –Up to 3 awards are anticipated.
- **Types of instruments that may be awarded** – Procurement contract, grant, cooperative agreement or other transaction.
- **Any cost sharing requirements** – None.
- **Agency contact**
  - Points of Contact
    The BAA Coordinator for this effort can be reached at:
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    Arlington, VA 22203-2114

PART II: FULL TEXT OF ANNOUNCEMENT

I.   **Funding Opportunity Description**

        This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016 and 2 CFR § 200.203. Any resultant award negotiations will follow all pertinent law and regulation, and any negotiations and/or awards for procurement contracts will use procedures under FAR 15.4, Contract Pricing, as specified in the BAA.

        The RACER overall program objective is to develop and demonstrate the capability for autonomous unmanned ground vehicles (UGVs) to maneuver in unstructured off-road terrain at speeds that are no longer limited by the autonomy software or processing time, but only by considerations of sensor limitations, vehicle mechanical limits, and safety.

        The goal of this RACER-Sim BAA is to seek innovations in simulation technologies that either significantly reduce the cost of off-road autonomy development or help bridge the gap from simulation to the real world. DARPA invites proposals for any and all innovative simulation technologies that support these RACER-Sim goals. DARPA welcomes proposals that range from smaller, focused efforts up through larger, broader ones.

        DARPA specifically encourages proposals in three areas of interest that support the RACER-Sim goals: 1) simulation-based, off-road autonomy algorithm development, 2) simulation environment technologies, and 3) simulation content generation.

        A.   **Program Background**

        Despite the commercial self-driving car industry making rapid advances in on-road autonomous mobility, military off-road autonomy algorithms and simulation capability development have lagged due to the complexity of the off-road problem. On-road simulations are focused on well-structured and highly predictable environments with limited obstacle classes. They are also able to leverage the availability of large structured data sets, including highly detailed and labeled maps and highly accurate localization (from sensed and external sources). As a result, on-road simulations are based on relatively simple two-dimensional (2D) navigation tasks that require minimal contextual understanding of their real world environment beyond classification of nearby objects such as vehicles, traffic signals and pedestrians. In addition, the self-driving car industry has used extensive and costly field-testing and required millions of hours of driving to gather data, train algorithms, and improve reliability.

        The military off-road environment is more challenging and complex, with three-dimensional surfaces, compliant soils and vegetation, hundreds of obstacle classes, lower fidelity or limited mapping data, unique platform-surface interactions, continuous motion planning, and no defined road networks or driving rules. Prior Department of Defense (DoD) Unmanned Ground Vehicles (UGVs) autonomy solutions have relied primarily on geometric, manually-tuned autonomy and limited simulation approaches to address the multitude of system challenges, primarily in perception, path planning, and control. These approaches were limited to 2.5 m/s average autonomous speed in complex off-road environments. As a result, military

autonomous vehicles lack the speed and resiliency to be operationally relevant or support battlefield Operational Tempo (OPTEMPO).

The practical use of simulation in off-road field robotics is limited. The past decade has seen the increased use of simulation in field robotics, especially in development, yet system demonstration in the real world is still the primary means of confirming system performance. Modeling the complexities of extensive off-road terrain remains a primary challenge of simulator physics and content scale.

Simulators are limited in their ability to model terrain complexities such as ground cover, terrain compliance, and vehicle-vegetation interactions. For example, it is not sufficient to simply model the appearance of vegetation/terrain/soil; simulations must sufficiently approximate the interaction of a multi-ton vehicle with that vegetation/terrain/soil to allow dynamic traversal of the terrain. "The complexities of setting up and using simulation, the reality gap, and the time and resources necessary to make the simulation useful...discourage developers from using simulation, limit the extent to which it is used, and prevent developers from leveraging the full benefits of simulation."[1] Modeling high speed off-road performance of sensors/modalities, sensor-to-terrain representations, autonomous platforms, and autonomous control remains a software and processing challenge, not yet allowing a simulation-to-real world demonstrable capability.

Recently, DARPA released a separate BAA to develop and evaluate, via real world demonstrations, the capability for autonomous unmanned ground vehicles (UGVs) to maneuver off-road at operationally relevant speeds (RACER[2]). The simulation-based funding opportunity presented within this RACER-Sim BAA is complementary to platform-based development approaches in that effort[2]. At the completion of both efforts, DARPA seeks to deliver off-road autonomy algorithm technologies which leverage the combined innovations from both simulation and the real world that can transition to future ground systems.

As part of the separate field based demonstration RACER BAA effort[2], DARPA plans to host field experiments at approximately 6-month intervals. RACER-Sim performers are encouraged to attend these field experiments, which could provide an opportunity to observe off-road autonomous vehicles on test courses and gain insights into problems and limitations that those vehicles encounter and to inform simulation development, and comparison of their simulations to real-world results.

In addition, under the separate RACER BAA effort[2], DARPA will provide an optional baseline autonomy stack that includes a baseline simulation environment that uses the Unity game engine using a custom interface to pass data between the Robot Operating System (ROS) and the simulation engine and initial data sets. These will also be available to RACER-Sim performers.

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[1] A. Afzal, D. Katz, C, Le Goues, C. Timperley; "A Study on the Challenges of Using Robotics Simulators for Testing;" School of Computer Science, Carnegie Mellon University, Pittsburgh, PA, 2020
[2] DARPA BAA HR001121S0004, released on October 21, 2020.
URL: https://beta.sam.gov/opp/da9af7e844a44112ad255d2dc0af505e/view

B.   Program Approach

DARPA anticipates a 4-year, two-phase RACER-Sim developmental effort. Phase 2 performers will be limited to Phase 1 prime contractors. Figure 1 shows the program schedule.

Phase 1 should focus on simulation technologies risk reduction. Phase 2 should focus on demonstrating the value of the simulation technologies. DARPA will review the results of all Phase 1 period activities and make a decision if the program should continue into Phase 2.

This BAA solicits proposals for Phase 1, which will comprise a 12-month base period followed by a nine month option.

Proposers shall also provide a Rough Order of Magnitude (ROM) cost for a 30-month Phase 2.
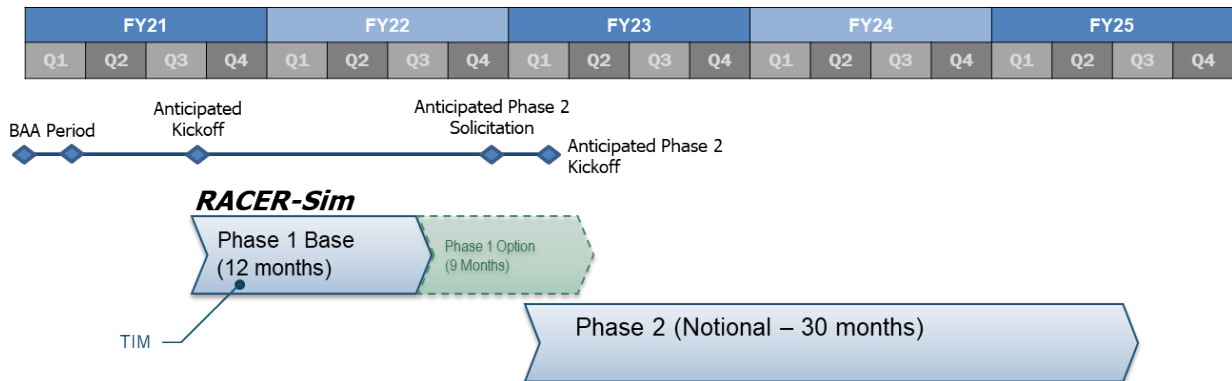

Figure 1. RACER-Sim Program Schedule

C.   Areas of Interest

Below are descriptions of the three specifically encouraged areas of interest. Proposers may address one, two, or all three of these areas. Proposers are not limited to these technical areas; rather, these indicate areas of particular interest to DARPA.

1.   Simulation-Based Off-Road Autonomy Algorithm Development

DARPA seeks new ways to develop autonomy stacks and algorithms using simulation, rather than relying on iterative testing on physical platforms. Performers will develop and demonstrate autonomy algorithms in their simulation environment that is optimized for the off-road environment.

DARPA envisions that performers will have a simulation environment that is tightly coupled with sensing physics, vehicle dynamics, autonomous control and terrain. DARPA expects that performers will constantly code and test their autonomy algorithms in the simulation environment and conduct periodic interim demonstrations. Performers should identify metrics

that quantify the baseline performance of their autonomy algorithms as well as the improvement expected. Performers should be able to measure and report on metrics attained during these interim demonstrations.

Simulation-based autonomy algorithms must be capable of operating and demonstrating performance in multiple simulated terrains, such as desert, forest, foothills, and coastal. Algorithms should rely primarily on vehicle-based sensing and perception to optimize path planning. The simulations and autonomy algorithms must also be able to adapt to novel terrains and simulated changes in landscape such as weather-induced environmental conditions or simulated human-generated changes (such as tire ruts or berms/trenches).

At the completion of Phase 1, performers should demonstrate that their simulation-based autonomy algorithms can support vastly improved off-road speeds for both short-distance complex terrain and long-distance simple terrain against their simulation baseline. Deliverables for this area are anticipated to minimally include RACER-Sim developed autonomy algorithms and complete autonomy stacks.

At the completion of Phase 2, performers should demonstrate that their simulation-based autonomy algorithms can support vastly improved off-road speeds for both short-distance complex terrain and long-distance simple terrain in simulation or the real world demonstrations. Real world, on-vehicle demonstration is encouraged as a means to provide undeniable proof of the value of the performer's simulation technologies.

2. Simulation Technologies

DARPA seeks to address specific limitations in current simulation environments. While many simulation environments exist, none have been optimized for off-road autonomy development at scale and at speed.

Performers are invited to offer simulation environment technologies that are tailored to off-road autonomous mobility and address the current gaps that prevent the widespread use of simulation to advance the state-of-the-art in off-road autonomy. Proposers should clearly define the problem they intend to solve, identify the impact(s) on current simulation environments caused by the problem, specify the anticipated benefits from the proposed solution, and describe the technical approach to solving the problem.

Challenges in the simulation environment may include, but are not limited to:
- Simulations that lead to improvements in real world results
- Simulating sensor radiometrics at high speeds (e.g. modeling camera dynamic range, accounting for vibration and sensor blur, effects from sun location)
- Simulating the natural environment with sufficient resolution for autonomy development in off-road terrain (e.g. vegetation and ground cover, soil compliance and vehicle interactions, slope/negative obstacles, positive obstacles, manmade obstacles, identification of water, depth and flow rates)
- Simulators that scale in performance to tens of square kilometers course and route areas that maintain natural environments with constantly unique sensing and

interaction encounters – where no two square meters are identical as experienced in the real world.
- Dynamic planning at high speeds
- Incorporation of high speed vehicle dynamics

Performers should describe their point of departure simulation environment as well as existing, planned tools and/or required computing resources. Performers should identify the specific and quantifiable improvements made by their simulation technology as metrics.

At the completion of Phase 1, performers should demonstrate how their simulation environment technologies close current gaps, increase the use of simulations for off-road autonomy, or improve the real world results from simulation. Deliverables for this area are anticipated to minimally include an executable simulator and/or simulation components.

At the completion of Phase 2, performers should have their simulation technologies employed and tested by at least one external user.

3. Simulation Content Generation

DARPA seeks novel technologies for generating content that can be used in simulations. Performers should offer content that augments current simulation environments, overcomes current barriers, is tailored to off-road autonomous mobility, and address the current gaps that prevent the widespread use of simulation to advance the state-of-the-art in off-road autonomy[1].

This simulation content generation could be thought of as a plug-in to existing simulation solutions that are currently deficient for the off-road domain, e.g. more accurate representations of non-rigid bodies and soil compliance, or more realistic vegetation, both in appearance and resistance to maneuver. The simulation content generated should be for multiple environments, represent realistic natural off-road terrains and demonstrate how the content generation would further the RACER overall program objective. Performers should identify metrics that quantify the expected improvement in the realisim, efficiency, and/or utility of the simulation content for use in autonomy algorithm development.

At the completion of Phase 1, performers should demonstrate how their simulation content generation successfully plugs into at least one existing off road simulation and the resulting improvements from their content. Deliverables for this area are anticipated to minimally include RACER program focused simulation content generated for multiple off-road environments and/or a simulation content engine that can generate and evaluate such content.

At the completion of Phase 2, performers should have their simulation content generation technologies employed and tested by at least one external user.

D.   Metrics, Milestones and Deliverables

Because of the anticipated diversity of the simulation technologies, proposers must define their own program metrics, milestones, and deliverables for their simulation technology as part of their proposal.

These metrics and milestones must allow DARPA to assess performer technical progress throughout the program. Good metrics are specific to the technology improvement, measurable and have goals. DARPA recommends performers give considerable thought to identifying specific metrics that quantifiably measure the technology improvement they expect to achieve. A few metrics are usually sufficient. Goals for each metric should be defined for the end of the Phase 1 base period, Phase 1 option, and Phase 2. Interim metric goals are recommended. Milestones tied to the interim and final metric goals are recommended. Proposers should be mindful of the RACER-Sim program goals when setting metrics and milestones.

Proposers will be expected to provide the deliverables listed in Table 1 at a minimum. Proposers should specify additional deliverables that logically support their simulation technology development and transition. Proposers should identify deliverables for the end of the Phase 1 base period, Phase 1 option, and Phase 2. Interim deliverables are encouraged. The proposer must explain how their deliverables enable DARPA to continue the use and development of the simulation technologies after the program and enable transition to future ground systems. Deliverables may be provided in the proposer's format

DARPA requires a kickoff meeting within one month after award. The purpose of the kickoff meeting will be to review the performer's simulation technologies and development approach and for the Government team to provide feedback on the proposal.

DARPA requires a Technical Interchange Meeting (TIM) within three months after award for each program phase and additional TIMs approximately every six months. The objective of these TIMs is to assess progress against the proposed metrics and milestones. The Government envisions these TIMs will be one day events that may be held virtually, but should include one TIM at the performer site. The TIMs may also coincide with RACER-Sim demonstrations and/or RACER DARPA-hosted field demonstrations.

DARPA requires bi-weekly teleconferences with the RACER-Sim Government team to communicate program status, enable the Program Manager to stay abreast of emerging technical, cost or schedule issues, and receive Government team feedback. It is expected that the biweekly agenda will vary and be established at the prior biweekly call based on current program priorities.

DARPA requires the simulation technologies and all source code be provided to a Government-furnished code and data repository.

Monthly Technical and Financial Status Reports should track and report on program metrics, milestones, risk reductions and technical progress to communicate status and assist DARPA in assessing proposer progress against their development approach.

Table 1. Program Deliverables

Deliverables	Schedule (Months After Award)
Phase 1 Base	
Phase 1 Kick-Off	1
Initial Phase 1 Technical Interchange Meeting Report	3
TIM and Development Approach Update 1 Report	5
TIM and Development Approach Update 2 Report	11
Phase 1 Option	
TIM and Development Approach Update 3 Report	17
Phase 2 (Notional)	
Initial Phase 2 Technical Interchange Meeting	21
TIM and Development Approach Update 4 Report	24
TIM and Development Approach Update 5 Report	30
TIM and Development Approach Update 6 Report	36
TIM and Development Approach Update 7 Report	42
TIM and Development Approach Update 8 Report	48
Programmatic	
Monthly Technical and Financial Status Reports	Monthly
Final Report	End of the Period of Performance

Poor progress against the performer's metrics and milestones, poor quality deliverables, or poor contribution to the RACER-Sim program goals could be grounds for program termination at any point.

II.   Award Information

A.   General Award Information

Up to three awards are anticipated. The amount of resources made available under this BAA will depend on the quality of the proposals received and the availability of funds.

The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this solicitation and to make awards without discussions with proposers. The Government also reserves the right to conduct discussions if it is later determined to be necessary. If warranted, portions of resulting awards may be segregated into pre-priced options. Additionally, DARPA reserves the right to accept proposals in their entirety or to select only portions of proposals for award. In the event that DARPA desires to award only portions of

a proposal, negotiations may be opened with that proposer. The Government reserves the right to fund proposals in phases with options for continued work, as applicable.

The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. Such additional information may include but is not limited to Representations and Certifications (see Section VI.B.4, "Representations and Certifications"). The Government reserves the right to remove proposals from award consideration, should the parties fail to reach agreement on award terms, conditions, and/or cost/price within a reasonable time, or the proposer fails to provide requested additional information in a timely manner. Proposals identified for negotiation may result in a procurement contract, grant, cooperative agreement, or other transaction, depending upon the nature of the work proposed, the required degree of interaction between parties, whether or not the research is classified as Fundamental Research, and other factors.

Proposers looking for innovative, commercial-like contractual arrangements are encouraged to consider requesting Other Transactions. To understand the flexibility and options associated with Other Transactions, consult http://www.darpa.mil/work-with-us/contract-management#OtherTransactions.

In accordance with 10 U.S.C. § 2371b(f), the Government may award a follow-on production contract or Other Transaction (OT) for any OT awarded under this BAA if: (1) that participant in the OT, or a recognized successor in interest to the OT, successfully completed the entire prototype project provided for in the OT, as modified; and (2) the OT provides for the award of a follow-on production contract or OT to the participant, or a recognized successor in interest to the OT.

In all cases, the Government contracting officer shall have sole discretion to select award instrument type, regardless of instrument type proposed, and to negotiate all instrument terms and conditions with selectees. DARPA will apply publication or other restrictions, as necessary, if it determines that the research resulting from the proposed effort will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any award resulting from such a determination will include a requirement for DARPA permission before publishing any information or results on the program. For more information on publication restrictions, see the section below on Fundamental Research.

B.   Proposals and Awards

Proposers shall prepare full proposals in accordance with the proposal format instructions detailed under Section IV to address Phase 1 (including options) and a ROM for Phase 2.

Continuation of the program beyond the Phase 1 base contract is the decision of the Government and will be based on Phase 1 base results, Government need, the availability of funds, the determination that performers have made sufficient progress towards meeting program performance objectives, maturing the required technologies and addressing risks.

Progress will be tracked against the proposer's metrics, milestones and deliverables and will be assessed for the contribution to the RACER-Sim goals. DARPA plans to select one or more performers to continue to Phase 2.

DARPA will provide updated proposal guidance and requests for Phase 2 proposals toward the end of Phase 1. Submission of full proposals for Phase 2 is optional and associated proposal preparation costs will not be reimbursed under Phase 1 awards. Performers who choose not to submit a full proposal for Phase 2 will not be considered for Phase 2 awards. Continuation of the program beyond the Phase 1 base contract is the decision of the Government and will be based on Phase 1 base results, Government need, the availability of funds, the determination that performers have made sufficient progress towards meeting program performance objectives, maturing the required technologies and addressing risks, and scientific review of the Phase 2 proposals. Evaluations of full proposals for future phases will be based on evaluation criteria to be specified in the Phase 2 proposal request.

C.   Fundamental Research

It is DoD policy that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. National Security Decision Directive (NSDD) 189 defines fundamental research as follows:

> 'Fundamental research' means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.

As of the date of publication of this BAA, the Government expects that program goals as described herein may be met by proposed efforts for fundamental research and non-fundamental research. Some proposed research may present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Based on the anticipated type of proposer (e.g., university or industry) and the nature of the solicited work, the Government expects that some awards will include restrictions on the resultant research that will require the awardee to seek DARPA permission before publishing any information or results relative to the program.

Proposers should indicate in their proposal whether they believe the scope of the research included in their proposal is fundamental or not. While proposers should clearly explain the intended results of their research, the Government shall have sole discretion to determine whether the proposed research shall be considered fundamental and to select the award instrument type. Appropriate language will be included in resultant awards for non-fundamental research to prescribe publication requirements and other restrictions, as appropriate. This language can be found at http://www.darpa.mil/work-with-us/additional-baa.

For certain research projects, it may be possible that although the research to be performed by a potential awardee is non-fundamental research, its proposed subawardee's effort may be fundamental research. It is also possible that the research performed by a potential awardee is fundamental research while its proposed subawardee's effort may be non-fundamental research. In all cases, it is the potential awardee's responsibility to explain in its

proposal which proposed efforts are fundamental research and why the proposed efforts should be considered fundamental research.

III. Eligibility Information

A. Eligible Applicants

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA.

1. Federally Funded Research and Development Centers (FFRDCs) and Government Entities

a) FFRDCs

FFRDCs are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they meet the following conditions. (1) FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector. (2) FFRDCs must provide a letter, on official letterhead from their sponsoring organization, that (a) cites the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and (b) certifies the FFRDC's compliance with the associated FFRDC sponsor agreement's terms and conditions. These conditions are a requirement for FFRDCs proposing to be awardees or subawardees.

All proposers are expected to address transition; transition is part of the evaluation criteria in Section V.A. However, given their special status, FFRDCs should describe how and when a proposed technology/system will transition to which Non-FFRDC organization(s).

b) Government Entities

Government Entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations. Government Entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations and compete with industry. This information is required for Government Entities proposing to be awardees or subawardees.

c) Authority and Eligibility

At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C.§ 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider FFRDC and Government Entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

2. Non-U.S. Organizations and/or Individuals

Non-U.S. organizations and/or individuals may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.

B. Organizational Conflicts of Interest

FAR 9.5 Requirements
In accordance with FAR 9.5, proposers are required to identify and disclose all facts relevant to potential OCIs involving the proposer's organization and *any* proposed team member (subawardee, consultant). Under this Section, the proposer is responsible for providing this disclosure with each proposal submitted to the BAA. The disclosure must include the proposer's, and as applicable, proposed team member's OCI mitigation plan. The OCI mitigation plan must include a description of the actions the proposer has taken, or intends to take, to prevent the existence of conflicting roles that might bias the proposer's judgment and to prevent the proposer from having unfair competitive advantage. The OCI mitigation plan will specifically discuss the disclosed OCI in the context of each of the OCI limitations outlined in FAR 9.505-1 through FAR 9.505-4.

Agency Supplemental OCI Policy
In addition, DARPA has a supplemental OCI policy that prohibits contractors/performers from concurrently providing Scientific Engineering Technical Assistance (SETA), Advisory and Assistance Services (A&AS) or similar support services and being a technical performer. Therefore, as part of the FAR 9.5 disclosure requirement above, a proposer must affirm whether the proposer or *any* proposed team member (subawardee, consultant) is providing SETA, A&AS, or similar support to any DARPA office(s) under: (a) a current award or subaward; or (b) a past award or subaward that ended within one calendar year prior to the proposal's submission date.

If SETA, A&AS, or similar support is being or was provided to any DARPA office(s), the proposal must include:

- The name of the DARPA office receiving the support;
- The prime contract number;
- Identification of proposed team member (subawardee, consultant) providing the support; and
- An OCI mitigation plan in accordance with FAR 9.5.

Government Procedures
In accordance with FAR 9.503, 9.504 and 9.506, the Government will evaluate OCI mitigation plans to avoid, neutralize or mitigate potential OCI issues before award and to determine whether it is in the Government's interest to grant a waiver. The Government will only evaluate OCI mitigation plans for proposals that are determined selectable under the BAA evaluation criteria and funding availability.

The Government may require proposers to provide additional information to assist the Government in evaluating the proposer's OCI mitigation plan.

If the Government determines that a proposer failed to fully disclose an OCI; or failed to provide the affirmation of DARPA support as described above; or failed to reasonably provide additional information requested by the Government to assist in evaluating the proposer's OCI mitigation plan, the Government may reject the proposal and withdraw it from consideration for award.

C.   Cost Sharing/Matching

Cost sharing is not required; however, it will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument. Cost sharing is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

For more information on potential cost sharing requirements for Other Transactions for Prototype, see http://www.darpa.mil/work-with-us/contract-management#OtherTransactions.

IV.   Application and Submission Information

A.   Address to Request Application Package

This announcement, any attachments, and any references to external websites herein constitute the total solicitation. If proposers cannot access the referenced material posted in the announcement found at https://beta.sam.gov/ or www.darpa.mil, contact the administrative contact listed herein.

B.   Content and Form of Application Submission

All submissions, including abstracts and proposals must be written in English with type not smaller than 12-point font. Smaller font may be used for figures, tables, and charts. All hard copies must be on 8½ inch by 11 inch paper with 1" margins. Copies of all documents submitted must be clearly labeled with the DARPA BAA number, proposer organization, and proposal title/proposal short title. Electronic copies of the submissions shall be provided in a searchable PDF format. Proposers are encouraged to provide source documents to facilitate extraction of graphics and tables.

NOTE: Non-conforming submissions that do not follow the instructions, formats, or page counts specified herein may be rejected without further review.

1.   Abstract Format

Proposers are strongly encouraged to submit an abstract in advance of a proposal. Abstracts should follow the same general format as described for proposals (see Section IV.B.2, "Proposal Format") but include ONLY Sections I and II of Volume I, Technical and Management Proposal. The cover sheet should be clearly marked with "ABSTRACT," and the technical area being addressed. The total length should not exceed 3 pages. The maximum page

count excludes the cover page in Volume I, Technical and Management Proposal, Section I, and official transmittal letter but does include any figures, tables, and charts. Official transmittal letter is not required.

Areas to be addressed are:
- o Identify the novel technology and how it enables the RACER-Sim goals.
- o Key elements of the envisioned technical approach highlighting novel technologies or other capabilities that enable the RACER-Sim vision.
- o Proposed metrics and how the technical approach can achieve the program metrics.
- o Relevant qualifications and experience of the proposer and potential teaming partners.
- o Top level schedule, including performer defined milestones, as well as envisioned goals for each milestone.

2.   Proposal Format

All proposals must be in the format given below. Proposals shall consist of two volumes: 1) Volume I, Technical and Management Proposal (composed of three parts), and 2) Volume II, Cost Proposal. The maximum page limit for Volume I is 25 pages. Bracketed numbers before each section denote recommended page limits.

Ensure that each section provides the detailed discussion of the proposed work necessary to enable an in-depth review of the specific technical and managerial issues. Specific attention must be given to addressing both risk and payoff of the proposed work that make it desirable to DARPA.

a)   Volume I, Technical and Management Proposal

Section I: Administrative (not included in page count)
A. Cover Sheet to include:
   (1) BAA number (HR001121S0005);
   (2) "RACER-Sim Volume 1, Technical and Management Proposal";
   (3) Lead organization submitting proposal;
   (4) Type of organization, selected among the following categories: "LARGE BUSINESS," "SMALL DISADVANTAGED BUSINESS," "OTHER SMALL BUSINESS," "HBCU," "MI," "OTHER EDUCATIONAL," OR "OTHER NONPROFIT"
   (5) Proposer's reference number (if any);
   (6) Other team members (if applicable) and type of organization for each;
   (7) Proposal title;
   (8) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available);

(9) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available); and;

(10) Date proposal was submitted.

B. Official transmittal letter

Section II: Summary of Proposal

A. {1} Executive-level summary of the problem to be addressed and the objectives for Phase 1 and Phase 2.

B. {1} Innovative claims for the proposed research. This section is the centerpiece of the proposal and should succinctly describe the uniqueness and benefits of the proposed approach relative to the current state-of-art alternate approaches.

C. {1} General discussion of other research in this area.

D. {0.5} A clearly defined organization chart for the program team which includes, as applicable: (1) the programmatic relationship of team member; (2) the unique capabilities of team members; (3) the task responsibilities of team members; (4) the teaming strategy among the team members; and (5) the key personnel along with the amount of effort to be expended by each key personnel during each year, expressed in percentages. DARPA requires key personnel identified in the proposal to be assigned as proposed, and the resulting contract/agreement will indicate no substitution shall be made without prior approval of the Government.

E. {0.5} A top-level schedule that outlines the proposer's overall technical approach

Section III: Detailed Proposal Information

A. {3} Technical Approach

Describe the proposer's RACER-Sim technical approach to developing novel simulation technologies that will enable unmanned ground combat vehicles to achieve the proposed RACER-Sim program metrics. Highlight key elements of the proposed technical approach along with key technical challenges and key risks of the proposed approach. Present substantiating data or analysis that indicates the potential feasibility and effectiveness of the approach for meeting the metrics. Identify key risk reduction strategies, demonstrations, or other events that will demonstrate progress toward achieving the metrics identified in the proposal. Include a comparison with other ongoing research indicating advantages and disadvantages of the proposed effort. Include a discussion of proposer's previous accomplishments and work in closely related research areas.

B. {6} Development Approach, Metrics, Milestones and Deliverables

Proposers will explain how they will address technical challenges and risks unique to their novel simulation technologies over both phases of the program. The development approach should contain the proposer's envisioned technical maturation plan, methods for assessing progress toward the proposer-defined program metrics and milestones, identification of key risk reductions and an identification of the proposer-defined deliverables. The development approach should be a compelling progression of activities that support the novel technology development including achieving the proposed metrics, overcoming the technical challenges, and reducing the identified risks. Specific goals should be associated with each milestone.

In their development approach, Proposers should state if they intend to participate in the DARPA-hosted field experiments or require any of the GFE described in the separate RACER BAA[2]. In addition, proposers should identify the impact on their proposed approach if the demonstrations or GFE are not available.

The development approach should clearly delineate between the Phase 1 base period, the Phase 1 option, and Phase 2.

C. {2} Phase 1 Management Plan

Provide a detailed discussion of the proposed management approach for successfully accomplishing Phase 1 objectives, deliverables and success metrics. Describe organizational responsibilities and authority for the development effort. Describe the approach, management processes, and tracking measures to be used for assessing and reporting technical progress, schedule, and financial status. Describe how key system knowledge acquired during the program will be captured.

Describe how activities will be managed and integrated across geographically and/or organizationally separate team elements. Describe the proposed approach to subcontractor management, quality control, and safety.

D. {1} Phase 2 Initial Management Plan

Provide an initial program plan and initial schedule for Phase 2. The Government is not expecting a detailed plan for Phase 2, but rather seeks to understand the relation of the proposed efforts in Phase 1 and Phase 2, and to have confidence that the proposer understands the Phase 2 challenges and how to achieve proposed Phase 2 objectives.. This preliminary Phase 2 information should also substantiate that the proposer understands the full scope of the program objectives and can reasonably expect to complete the overall program through Phase 2 within budget and schedule.

E. {3} Program Team

Substantiate the ability of the proposed team to execute all phases of the RACER-Sim program, including implementation of a performer-hosted demonstration environment. Describe relevant program experience on technically challenging, software development

and field test based programs, including ability to successfully execute within schedule and budget. These capabilities can be substantiated by a combination of the team's corporate experience and proposed key personnel experience. Describe proposed teammates, their competencies, experience, and proposed role. Provide qualifications of key personnel as defined by the proposer's team organization. Describe key personnel roles and responsibilities, along with the percentage time commitment of each of these key personnel. DARPA requires key personnel identified in the proposal to be assigned as proposed, and the resulting contract/agreement will indicate no substitution shall be made without prior approval of the Government. Detail support that are required to execute this program, including formal teaming agreements.

F. {1} Description of the Facilities That Would be Used for the Proposed Effort.

Describe the facilities that would be used for the proposed effort.

G. {1} Security Management Architecture and/or Approach

The complete, assembled autonomy stack software code that is developed for simulation under the RACER-Sim program and data collected from the complete, assembled autonomy stack software code that is developed under the RACER-Sim program will be both Controlled Unclassified Information (CUI) and restricted to US-persons. Other work proposed or data collected could require SECRET level protection. Proposers should refer to the Security Classification Guide for the program security requirements.

Proposers must specify whether or not their team of organizations currently has the capability to perform work in the following two categories at the start of Phase 1: 1) unclassified fundamental research open to non-US persons and 2) Controlled Unclassified Information restricted to US persons. If a proposer does not currently have the capability to perform work in both categories, they must include a description of how they would meet a requirement to perform work in both categories at the start of Phase 1. If a proposer anticipates performing work at the SECRET level on this program, a third category for SECRET should be included in this section.

Proposers must provide a table or list identifying which of the two categories of work each organization on their team is currently capable of performing.

Proposers must provide a description of the security management architecture and approach that would be used for the proposed effort, including how the two categories of work would be segregated across organizations, personnel and systems.

H. {1} Description of Technology Transfer

Provide a description of the results, products, transferable technology, and expected technology transfer path to supplement information included elsewhere in the proposal. This should also address transitioning intellectual property for U.S. military applications, if applicable. See also Section IV.B.3.i of this BAA, "Intellectual Property."

Provide a description of how the RACER-Sim technology and deliverables would transfer to developing and demonstrating the capability for real-world autonomous UGVs to maneuver in unstructured off-road terrain at speeds that are no longer limited by the autonomy software or processing time, but only by considerations of sensor limitations, vehicle mechanical limits, and safety.

Proposers are encouraged to leverage existing simulation, modeling and development tools. Concurrently, DARPA desires maximum flexibility to transition the research under this BAA to other programs and autonomous systems.

To maximize opportunities for transition, performers must deliver their simulation technologies and all source code developed under the RACER-Sim program to a Government-furnished code and data repository.

If other than unlimited data rights are proposed for any source code that supports or is needed for the simulation technologies developed under the RACER-Sim program, proposers must provide a clear explanation of how the Government can use and extend the simulation technologies developed under the RACER-Sim program in the future given the other than unlimited data rights.

I. Statement of Work (SOW) {not included in page count}

Do not include any proprietary information in the SOW.

In plain English, clearly define the technical tasks/subtasks to be performed, their durations, and dependencies among them. The proposer shall employ a common work breakdown structure (WBS), or other detailed project organization structure, for numbering all activities in the SOW, IMS, and cost proposal. The SOW should clearly separate tasks into Phase 1 base and Phase 1 option.
For each task/subtask, the SOW should include:
   o A general description of the objective (for each defined task/activity);
   o A detailed description of the approach to be taken to accomplish each defined task/activity;
   o Identification of the primary organization responsible for task execution (prime, subcontractor, by name, etc.) by work breakdown structure (WBS) element;
   o The completion criteria for each task/activity, such as a product, event, or milestone that defines its completion; and
   o A definition of all deliverables (reports, data, software, documentation, hardware, demonstration system element, multimedia, etc.) to be provided to the Government in support of the proposed research tasks/activities. Include expected delivery date for each deliverable.
   o Clearly identify any tasks/subtasks (to be performed by either an awardee or subawardee) that will be accomplished on-campus at a university, if applicable
   o Clearly identify any tasks/subtasks (to be performed by either an awardee or subawardee) that will be performed by or include non-US persons.

J. Integrated Master Schedule (IMS) {not included in page count}

   Do not include any proprietary information in the IMS.

   Provide an IMS detailing the specific tasks to be accomplished, their interrelationship, and time sequencing. The IMS must provide at least the same level of WBS detail as the SOW. The IMS should include a critical path that contains all major events leading up to the first vehicle field demo as well as subsequent activities culminating in the final Phase 1 DARPA-hosted field demonstration. The IMS should provide details on critical activities such as key processes, developments, or activities that will pace the development schedule.

K. Government Furnished Material{not included in page count}

   Proposers must identify any required Government-furnished facilities, equipment, data, manpower, additional facility improvements over existing facility capabilities, and equipment to support the proposer's Phase 1 RACER-Sim development approach. This list should include rationale, ROM cost, and dates needed. ROM costs are not needed for Government Furnished Material described in BAA HR001121S004[2]. The cost of any Phase 1 Government Furnished Material will count against the total Phase 1 funding available.

L. Intellectual Property {not included in page count}

   Discuss the proposed data rights approach for the entire program, including deliverables. The Government seeks to transition RACER-Sim technologies to multiple platforms and therefore desires a maximally open architecture without proprietary claims. If the proposer intends to assert proprietary claims, they must provide the rationale for those claim(s) (e.g., potential commercial follow-on applications or use of Section 845), and describe why it is in the best interest of the Government. If no restrictions are intended, this should be stated.

M. Limited Data Rights {not included in page count}

   Proposers must submit a separate list of all items, such as technical data or computer software, that will be furnished to the Government with other than unlimited rights. The Government will assume unlimited rights if proposers fail to identify any intellectual property restrictions in their proposals. Include in this section all proprietary claims to the results, prototypes, intellectual property, or systems supporting and/or necessary for the use of the research, results, and/or prototype. If there are no proprietary claims, this should be stated. For forms to be completed regarding intellectual property, see Section IV.B.3.i of this BAA.

Include in this section all demonstration systems, deliverables or systems supporting and/or necessary for the use of the research, results, demonstration systems and/or deliverables that will be provided with other than unlimited rights.

N. Resumes {not included in page count}

Proposers may submit resumes of personnel identified in the organization chart. Resumes for key personnel are encouraged. Resumes are limited to three (3) pages each.

b)   Volume II, Cost Proposal

All proposers, including FFRDCs, must submit the following:

Cover sheet to include:
   (1) BAA number (HR001121S0005);
   (2) "RACER-Sim Volume II, Cost Proposal";
   (3) Lead Organization submitting proposal;
   (4) Type of organization selected among the following categories: "LARGE BUSINESS," "SMALL DISADVANTAGED BUSINESS," "OTHER SMALL BUSINESS," "HBCU," "MI," "OTHER EDUCATIONAL," OR "OTHER NONPROFIT";
   (5) Proposer's reference number (if any);
   (6) Other team members (if applicable) and type of organization for each;
   (7) Proposal title;
   (8) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available);
   (9) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), and electronic mail (if available);
   (10) Date proposal was submitted;
   (11) Award instrument requested: cost-plus-fixed-fee (CPFF), cost-contract—no fee, cost sharing contract – no fee, or other type of procurement contract (specify), grant, cooperative agreement, or Other Transaction;
   (12) Total funds requested from DARPA, and the amount of cost share (if any);
   (13) Total proposed cost separated by basic award and option(s) (if any);
   (14) Period(s) of performance separated by basic award and option(s) (if any);
   (15) ROM cost for Phase 2 based on the Phase 2 initial management plan and the top level schedule;
   (16) Place(s) of performance
   (17) Name, address, and telephone number of the proposer's cognizant Defense Contract Management Agency (DCMA) administration office (if known);
   (18) Name, address, and telephone number of the proposer's cognizant Defense Contract Audit Agency (DCAA) audit office (if known);
   (19) DUNS number;
   (20) TIN number;
   (21) CAGE Code;

(22) Subawardee Information; and
(23) Proposal validity period (minimum 180 days).

<u>Additional Cost Proposal Information</u>

A. Supporting Cost and Pricing Data

The proposer should include supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates. The proposal should include a description of the method used and the basis of estimates used to estimate costs and supporting documentation. The realism of the total cost estimate should be addressed. This may be shown by a comparison to previous efforts that were of a similar size, scope and complexity, or by outlining the approach that was used to establish the total cost of the program. The realism of the total cost estimation should be substantiated, where possible, by showing the as-bid cost and schedule as well as the at-completion cost and schedule of previous science and technology development efforts of similar size, scope, and complexity. Allocations for tasks in the cost proposal should include a task-level basis of estimate. The Government requires that tables included in the cost proposal also be provided in an editable (e.g., MS Excel) format with calculation formulas intact to allow traceability of the cost proposal numbers across the prime and subcontractors.

B. Cost Breakdown Information and Format

Detailed cost breakdown to include:
- Basis for total cost estimate
- Assessment of realism of the total cost estimate by comparison to efforts of similar size, scope, and complexity, or by other means described in the proposal
- Discussion of other cost estimation techniques used
- Total program costs separated by Phase 1 base and Phase 1 option broken down by task and further broken down by major cost items (direct labor, including labor categories; subcontracts; materials; other direct costs; overhead charges, etc.)
- Major program tasks by fiscal year
- A summary of projected total program funding requirements separated by Phase 1 base and Phase 1 option broken down by month
- The source, nature, and amount of any cost-sharing
- An itemization of major subcontracts
- An itemization of major equipment purchases
- Documentation supporting the reasonableness of proposed major equipment, major materials and major other direct costs (vendor quotes, past purchase orders/purchase history, detailed engineering estimates, etc.).
- An itemization of any information technology (IT) purchase, as defined by FAR 2.101 – Documentation supporting the purpose and reasonableness of the proposed equipment costs (vendor quotes, past purchase orders/purchase history, detailed engineering estimates, etc.) shall be provided, including a letter stating why the proposer cannot provide the requested resources from its own funding for prime and all sub-awardees.

o   Identification of pricing assumptions of which may require incorporation into the resulting award instrument (e.g., use of Government Furnished Property/Facilities/Information, access to Government Subject Matter Experts, etc.)

Tables included in the cost proposal should be in editable (e.g. MS Excel) format with calculation formulas intact. NOTE: If PDF submissions differ from the Excel submission, the PDF will take precedence.

Per FAR 15.403-4, certified cost or pricing data shall be required if the proposer is seeking a procurement contract award per the referenced threshold, unless the proposer requests and is granted an exception from the requirement to submit cost or pricing data. Certified cost or pricing data are not required if the proposer proposes an award instrument other than a procurement contract (e.g., a grant, cooperative agreement, or other transaction.)

a.   Subawardee Proposals

The awardee is responsible for compiling and providing all subawardee proposals for the Procuring Contracting Officer (PCO)/Grants Officer (GO)/Agreements Officer (AO), as applicable. Subawardee proposals should include Interdivisional Work Transfer Agreements (ITWA) or similar arrangements. Where the effort consists of multiple portions that could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each.

All proprietary subawardee proposal documentation, prepared at the same level of detail as that required of the awardee's proposal and that cannot be uploaded with the proposed awardee's proposal, shall be provided to the Government either by the awardee or by the subawardee organization when the proposal is submitted. Subawardee proposals submitted to the Government by the proposed awardee should be submitted in a sealed envelope (or submitted electronically via BAAT separately from the prime) that the proposed awardee will not be allowed to view. The subawardee must provide the same number of copies to the PCO/GO/AO as is required of the awardee. See Section IV.B.4.b of this BAA for proposal submission information.

b.   Other Transaction Requests

The Government may award either a Federal Acquisition Regulation (FAR) based contract or an Other Transaction for Prototype (OT) agreement for prototype system development.

All proposers requesting an OT must include a detailed list of milestones. Each milestone must include the following:
- milestone description,
- completion criteria,
- due date, and

- payment/funding schedule (to include, if cost share is proposed, awardee and Government share amounts).

It is noted that, at a minimum, milestones should relate directly to accomplishment of program technical metrics as defined in the BAA and/or the proposer's proposal. Agreement type, expenditure or fixed-price based, will be subject to negotiation by the Agreements Officer. Do not include proprietary data.

3. Additional Proposal Information

a) Proprietary Markings

Proposers are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked with a label such as "Proprietary." NOTE: "Confidential" is a classification marking used to control the dissemination of U.S. Government National Security Information as dictated in Executive Order 13526 and should not be used to identify proprietary business information.

b) Security Information

(1) Program Security Information

Proposers should include with their proposal any proposed solution(s) to program security requirements unique to this program. Common program security requirements include but are not limited to: operational security (OPSEC) contracting/sub-contracting plans; foreign participation or materials utilization plans; program protection plans (which may entail the following) manufacturing and integration plans; range utilization and support plans (air, sea, land, space, and cyber); data dissemination plans; asset transportation plans; classified test activity plans; disaster recovery plans; classified material/asset disposition plans and public affairs/communications plans.

(2) Controlled Unclassified Information (CUI)
For unclassified proposals containing controlled unclassified information (CUI), applicants will ensure personnel and information systems processing CUI security requirements are in place.

(a) CUI Proposal Markings
If an unclassified submission contains CUI or the suspicion of such, as defined by Executive Order 13556 and 32 CFR Part 2002, the information must be appropriately and conspicuously marked CUI in accordance with DoDI 5200.48. Identification of what is CUI about this DARPA program will be detailed in a DARPA CUI Guide and will be provided as an attachment to the BAA or may be provided at a later date.

(b) CUI Submission Requirements
Unclassified submissions containing CUI may be submitted via DARPA's BAA Website (https://baa.darpa.mil) in accordance with Part II Section VIII of this BAA.

(c) Proposers submitting proposals involving the pursuit and protection of DARPA information designated as CUI must have, or be able to acquire prior to contract award, an information system authorized to process CUI information IAW NIST SP 800-171 and DoDI 8582.01.

(3)   Classified Submissions

For classified proposals, applicants will ensure all industrial, personnel, and information systems processing security requirements are in place and at the appropriate level (e.g., Facility Clearance Level (FCL), Automated Information Security (AIS), Certification and Accreditation (C&A), and any Foreign Ownership Control and Influence (FOCI) issues are mitigated prior to submission. Additional information on these subjects can be found at http://www.dss.mil.

(a)   Classified Proposal Markings

At this time, DARPA anticipates that proposals submitted in response to this BAA may generate or involve access to classified information. Classified submissions shall be transmitted and marked in accordance with the following guidance. Security classification guidance via a Security Classification Guide (SCG) and/or DARPA DD Form 254, "DoD Contract Security Classification Specification," will be provided as an attachment to the BAA or may be provided at a later date.

If a submission contains Classified National Security Information or the suspicion of such, as defined by Executive Order 13526, the information must be appropriately and conspicuously marked with the proposed classification level and declassification date. Submissions requiring DARPA to make a final classification determination shall be marked as follows:

"CLASSIFICATION DETERMINATION PENDING. Protect as though classified_____(insert the recommended classification level, e.g., Top Secret, Secret or Confidential)"

NOTE: Classified submissions must indicate the classification level of not only the submitted materials, but also the classification level of the anticipated award.

Submissions containing both classified information and CUI must be appropriately and conspicuously marked with the proposed classification level as well as ensuring CUI is marked in accordance with DoDI 5200.48.

(b)   Classified Submission Requirements and Procedures

Proposers submitting classified information must have, or be able to obtain prior to contract award, cognizant security agency approved facilities, information systems, and appropriately cleared/eligible personnel to perform at the classification level proposed. All

proposer personnel performing Information Assurance (IA)/Cybersecurity related duties on classified Information Systems shall meet the requirements set forth in DoD Manual 8570.01-M (Information Assurance Workforce Improvement Program). Additional information on the subjects discussed in this section may be found at http://www.dss.mil.

Proposers choosing to submit classified information from other collateral classified sources (i.e., sources other than DARPA) must ensure (1) they have permission from an authorized individual at the cognizant Government agency (e.g., Contracting Officer, Program Manager); (2) the proposal is marked in accordance with the source Security Classification Guide (SCG) from which the material is derived; and (3) the source SCG is submitted along with the proposal.

When a proposal includes a classified portion, and when able according to security guidelines, we ask that proposers send an e-mail to HR001121S0005@darpa.mil as notification that there is a classified portion to the proposal. When submitting a hard copy of the classified portion according to the instructions outlined below, proposers should submit six (6) hard copies of the classified portion of their proposal and two (2) CD-ROMs containing the classified portion of the proposal as a single searchable Adobe PDF file.

See the Security Classification Guide for Security classification guidance and guidance on the DD Form 254, "DoD Contract Security Classification Specification. A copy of the Security Classification Guide may be requested by emailing HR001121S0005@darpa.mil with "Requesting Security Classification Guide" as the subject line and the following in the text of the email: the requestor's name, phone number, and contact email and the organization name, cage code (if available), mailing address, and website.

Confidential, Secret, and Top Secret Information

Use transmission, classification, handling, and marking guidance provided by previously issued SCGs, the DoD Information Security Manual (DoDM 5200.01, Volumes 1 - 4), and the National Industrial Security Program Operating Manual, including the Supplement Revision 1 (DoD 5220.22-M and DoD 5200.22-M Sup. 1), when submitting Confidential, Secret, and/or Top Secret classified information.

Confidential and Secret

Confidential and Secret classified information may be submitted via ONE of the two following methods to the mailing address listed in the contact information in Part I of this BAA:

- Hand-carried by an appropriately cleared and authorized courier to the DARPA Classified Document Registry (CDR). Prior to traveling, the courier shall contact the DARPA CDR at 703-526-4052 to coordinate arrival and delivery.

OR

- Mailed via U.S. Postal Service (USPS) Registered Mail or USPS Express Mail. All classified information will be enclosed in opaque inner and outer covers and double-

wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. Senders should mail to the mailing address listed in the contact information herein.

The inner envelope shall be addressed to Defense Advanced Research Projects Agency, ATTN: DARPA/TTO (Stuart Young), with a reference to the BAA number.

The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to Defense Advanced Research Projects Agency, Security & Intelligence Directorate, Attn: CDR.

Top Secret Information
Top Secret information must be hand-carried by an appropriately cleared and authorized courier to the DARPA CDR. Prior to traveling, the courier shall contact the DARPA CDR at 703-526-4052 to coordinate arrival and delivery.

Sensitive Compartmented Information (SCI)
SCI must be marked, managed and transmitted in accordance with DoDM 5105.21 Volumes 1 - 3. Questions regarding the transmission of SCI may be sent to the DARPA Technical Office Program Security Officer (PSO) via the BAA mailbox or by contacting the DARPA Special Security Officer (SSO) at 703-812-1970.

Successful proposers may be sponsored by DARPA for access to SCI. Sponsorship must be aligned to an existing DD Form 254 where SCI has been authorized. Questions regarding SCI sponsorship should be directed to the DARPA Personnel Security Office at 703-526-4543.

Special Access Program (SAP) Information
SAP information must be marked in accordance with DoDM 5205.07 Volume 4 and transmitted by specifically approved methods which will be provided by the Technical Office PSO or their staff.

Proposers choosing to submit SAP information from an agency other than DARPA are required to provide the DARPA Technical Office PSO written permission from the source material's cognizant Special Access Program Control Officer (SAPCO) or designated representative. For clarification regarding this process, contact the DARPA Technical Office PSO via the BAA mailbox or the DARPA SAPCO at 703-526-4102.

Additional SAP security requirements regarding facility accreditations, information security, personnel security, physical security, operations security, test security, classified transportation plans, and program protection planning may be specified in the DD Form 254.

NOTE: All proposals containing Special Access Program (SAP) information must be processed on a SAP information technology (SAP IT) system that has received an Approval-to-Operate (ATO) from the DARPA Technology Office PSO or other applicable DARPA SAP IT Authorizing Official. The SAP IT system ATO will be based upon the Risk Management Framework (RMF) process outlined in the Joint Special Access Program

Implementation Guide (JSIG), current version (or successor document). (Note: A SAP IT system is any SAP IT system that requires an ATO. It can range from a single laptop/tablet up to a local and wide area networks.)

The Department of Defense mandates the use of a component's SAP enterprise system unless a compelling reason exists to use a non-enterprise system. The DARPA Chief Information Officer (CIO) must approve any performer proposal to acquire, build, and operate a non-enterprise SAP IT system during the awarded period of performance. Use of the DARPA SAP enterprise system, SAVANNAH, does not require CIO approval.

SAP IT disposition procedures must be approved in accordance with the DoD CIO Memorandum of April 20, 2020[3].

(3)   Unclassified Submissions

DARPA anticipates that submissions received under this BAA will be unclassified. However, should a proposer wish to submit classified information, an unclassified e-mail must be sent to the BAA mailbox requesting submission instructions from the Technical Office PSO. If a determination is made that the award instrument may result in access to classified information, a SCG and/or DD Form 254 will be issued by DARPA and attached as part of the award.

(4)   Both Classified and Unclassified Submissions

For a proposal that includes both classified and unclassified information, the proposal may be separated into an unclassified portion and a classified portion. The proposal should include as much information as possible in the unclassified portion and use the classified portion ONLY for classified information. The unclassified portion can be submitted through the DARPA BAA Website, per the instructions in Section IV.B.4.b below. The classified portion must be provided separately, according to the instructions outlined in the 'Classified Submission Requirements and Procedures' section above.

c)   Disclosure of Information and Compliance with Safeguarding Covered Defense Information Controls

The following provisions and clause apply to all solicitations and contracts; however, the definition of "controlled technical information" clearly exempts work considered fundamental research and therefore, even though included in the contract, will not apply if the work is fundamental research.

DFARS 252.204-7000, "Disclosure of Information"
DFARS 252.204-7008, "Compliance with Safeguarding Covered Defense Information Controls"

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[3] The title of this memorandum is CUI and the memo is classified SECRET//HANDLE VIA SPECIAL ACCESS CHANNELS ONLY. This memorandum may be provided under separate cover.

DFARS 252.204-7012, "Safeguarding Covered Defense Information and Cyber Incident Reporting"

The full text of the above solicitation provision and contract clauses can be found at http://www.darpa.mil/work-with-us/additional-baa#NPRPAC.

Compliance with the above requirements includes the mandate for proposers to implement the security requirements specified by National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171, "Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations" (see https://doi.org/10.6028/NIST.SP.800-171r1) and DoDI 8582.01 that are in effect at the time the solicitation is issued.

For awards where the work is considered fundamental research, the contractor will not have to implement the aforementioned requirements and safeguards. However, should the nature of the work change during performance of the award, work not considered fundamental research will be subject to these requirements.

d) Human Subjects Research (HSR)/Animal Use

Proposers that anticipate involving human subjects or animals in the proposed research must comply with the approval procedures detailed at http://www.darpa.mil/work-with-us/additional-baa, to include providing the information specified therein as required for proposal submission.

e) Approved Cost Accounting System Documentation

Proposers that do not have a Cost Accounting Standards (CAS) compliant accounting system considered adequate for determining accurate costs that are negotiating a cost- type procurement contract must complete an SF 1408. For more information on CAS compliance, see http://www.dcaa.mil/. To facilitate this process, proposers should complete the SF 1408 found at http://www.gsa.gov/portal/forms/download/115778 and submit the completed form with the proposal.

f) Small Business Subcontracting Plan

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)) and FAR 19.702(a)(1), each proposer who submits a contract proposal and includes subcontractors might be required to submit a subcontracting plan with their proposal. The plan format is outlined in FAR 19.704.

g) Section 508 of the Rehabilitation Act (29 U.S.C. § 749d)/FAR 39.2

All electronic and information technology acquired or created through this BAA must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. § 749d)/FAR 39.2.

h) Grant Abstract

Per Section 8123 of the Department of Defense Appropriations Act, 2015 (Pub. L. 113-235), all grant awards must be posted on a public website in a searchable format. To comply with this requirement, proposers requesting grant awards must submit a maximum one (1) page abstract that may be publicly posted and explains the program or project to the public. The proposer should sign the bottom of the abstract confirming the information in the abstract is approved for public release. Proposers are advised to provide both a signed PDF copy, as well as an editable (e.g., Microsoft word) copy. Abstracts contained in grant proposals that are not selected for award will not be publicly posted.

i) Intellectual Property

All proposers must provide a good faith representation that the proposer either owns or possesses the appropriate licensing rights to all intellectual property that will be utilized under the proposed effort.

(1) For Procurement Contracts

Proposers responding to this BAA requesting procurement contracts will need to complete the certifications at DFARS 252.227-7017. See http://www.darpa.mil/work-with-us/additional-baa for further information. If no restrictions are intended, the proposer should state "none." The table below captures the requested information:

Technical Data Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(NARRATIVE)	(LIST)	(LIST)	(LIST)

(2) For All Non-Procurement Contracts

Proposers responding to this BAA requesting a Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototypes shall follow the applicable rules and regulations governing these various award instruments, but, in all cases, should appropriately identify any potential restrictions on the Government's use of any Intellectual Property contemplated under the award instrument in question. This includes both Noncommercial Items and Commercial Items. Proposers are encouraged use a format similar to that described in Paragraph (1). above. If no restrictions are intended, then the proposer should state "NONE."

All proposers responding to this BAA must submit a separate list of all contract deliverables, including technical data or computer software that will be furnished to the Government with other than unlimited rights. The Government will assume unlimited rights if

proposers fail to identify any intellectual property restrictions in their proposals. Include in this section all limited data rights or Government purpose rights, or proprietary claims to the results, data, reports, prototypes, software, or systems supporting and/or necessary for the use of the research, results, and/or prototype. If there are no proprietary claims, this should be stated.

In support of integration and future transition opportunities, DARPA expects to receive, at a minimum, Government Purpose Rights for all hardware, software, interfaces, Application Programming Interfaces (APIs), algorithms, models, intellectual property, prototypes, support and test systems and equipment, sensor interfaces, data streams, analysis, and results developed under this program and/or that are necessary for the use of the research, results, and/or prototypes from this program.

j)   System for Award Management (SAM) and Universal Identifier Requirements

All proposers must be registered in SAM unless exempt per FAR 4.1102. FAR 52.204-7, "System for Award Management" and FAR 52.204-13, "System for Award Management Maintenance" are incorporated into this BAA. See http://www.darpa.mil/work-with-us/additional-baa for further information.

International entities can register in SAM by following the instructions in this link: https://www.fsd.gov/fsd-gov/answer.do?sysparm_kbid=dbf8053adb119344d71272131f961946&sysparm_search=KB0013221.

4.   Submission Information

All times listed herein are in U.S. Eastern Time. Proposers are warned that submission deadlines as outlined herein are strictly enforced. When planning their response to this solicitation, proposers should take into account that some parts of the submission process may take from one business day to one month to complete (e.g., registering for a DUNS number or TIN).

DARPA will acknowledge receipt of all submissions and assign an identifying control number that should be used in all further correspondence regarding the submission. DARPA intends to use electronic mail correspondence regarding HR001121S0005. Submissions may not be submitted by fax or e-mail; any so sent will be disregarded.

Submissions will not be returned. An electronic copy of each submission received will be retained at DARPA and all other non-required copies destroyed. A certification of destruction may be requested, provided the formal request is received by DARPA within 5 days after notification that a proposal was not selected.

Note: Proposers submitting a proposal via the DARPA BAA Submission site MUST complete all submission activities (including selecting the "Finalize" button and allowing

sufficient time for all files to upload) prior to the deadline. Failure to do so will result in a late submission.

For abstract and proposal submission dates, see Part I., Overview Information. Submissions received after these dates and times may not be reviewed.

The proposal must be received at DARPA/TTO, 675 North Randolph Street, Arlington, VA 22203-2114 (Attn.: HR001121S0005) on or before, <mark>February 11, 2021, 4:00pm Eastern Time</mark>, in order to be considered during the initial round of selections; however, proposals received after this deadline may be received and evaluated up to six months (180 days) from date of posting on the System for Award Management, Contract Opportunities (https://Beta.SAM.gov) or Grants.gov (http://www.grants.gov). The ability to review and select proposals submitted after the initial round deadline specified in the BAA or due date otherwise specified by DARPA will be contingent on availability of funds. Proposers are warned that the likelihood of available funding is greatly reduced for proposals submitted after the initial closing date deadline.

a)   Abstract Submission

Proposers are <u>strongly encouraged</u> to submit an abstract in advance of a proposal. This procedure is intended to minimize unnecessary effort in proposal preparation and review. The time and date for submission of abstracts is specified in Part I., Overview Information. DARPA will acknowledge receipt of the submission and assign a control number that should be used in all further correspondence regarding the abstract.

For Abstracts Being Submitted Using the DARPA BAA Website:

Unclassified abstracts sent in response to this BAA may be submitted via DARPA's BAA Website (https://baa.darpa.mil). Please refer to the Proposal Submission section below for additional details. All abstracts submitted electronically through the DARPA BAA Submission website must be uploaded as zip files (.zip or .zipx extension). The final zip file should only contain the document(s) requested herein and must not exceed 50 MB in size. Only one zip file will be accepted per abstract; abstracts not uploaded as zip files will be rejected by DARPA.

Refer to Section VI.A.1 for how DARPA will respond to abstract submissions.

b)   Proposal Submission

Refer to Section VI.A.2 for how DARPA will notify proposers as to whether or not their proposal has been selected for potential award.

(1)   For Proposers Requesting Grants or Cooperative Agreements

Proposers requesting grants or cooperative agreements must submit proposals through one of the following methods: (1) electronic upload per the instructions at https://www.grants.gov/applicants/apply-for-grants.html; or (2) hard-copy mailed directly to

DARPA. If proposers intend to use Grants.gov as their means of submission, then they must submit their entire proposal through Grants.gov; applications cannot be submitted in part to Grants.gov and in part as a hard-copy. Proposers using Grants.gov do not submit hard-copy proposals in addition to the Grants.gov electronic submission.

Submissions: Proposers must submit the three forms listed below.

Form 1: SF 424 Research and Related (R&R) Application for Federal Assistance, available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf. *This form must be completed and submitted.*

To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. § 1681 et.seq.), the Department of Defense (DoD) 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 science, technology, engineering or mathematics disciplines. In addition, the National Defense Authorization Act (NDAA) for FY 2019, Section 1286, directs the Secretary of Defense to protect intellectual property, controlled information, key personnel, and information about critical technologies relevant to national security and limit undue influence, including foreign talent programs by countries that desire to exploit United States' technology within the DoD research, science and technology, and innovation enterprise. This requirement is necessary for all research and research-related educational activities. The DoD is using the two forms below to collect the necessary information to satisfy these requirements. Detailed instructions for each form are available on Grants.gov.

The Research and Related Senior/Key Person Profile (Expanded) form will be used to collect the following information for all senior/key personnel, including Project Director/Principal Investigator and Co-Project Director/Co-Principal Investigator, whether or not the individuals' efforts under the project are funded by the DoD:
- Degree Type and Degree Year.
- Current and Pending Support, including:
  - A list of all current projects the individual is working on, in addition to any future support the individual has applied to receive, regardless of the source.
  - Title and objectives of the other research projects.
  - The percentage per year to be devoted to the other projects.
  - The total amount of support the individual is receiving in connection to each of the other research projects or will receive if other proposals are awarded.
  - Name and address of the agencies and/or other parties supporting the other research projects
  - Period of performance for the other research projects.

Additional senior/key persons can be added by selecting the "Next Person" button at the bottom of the form. Note that, although applications without this information completed may pass Grants.gov edit checks, if DARPA receives an application without the required information, DARPA may determine that the application is incomplete and may cause your submission to be rejected and eliminated from further review and consideration under the BAA. DARPA reserves

the right to request further details from the applicant before making a final determination on funding the effort.

Form 2: Research and Related Senior/Key Person Profile (Expanded), available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_2_0-V2.0.pdf. *This form must be completed and submitted.*

Form 3: Research and Related Personal Data, available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_PersonalData_1_2-V1.2.pdf. *Each applicant must complete the name field of this form, however, provision of the demographic information is voluntary. Regardless of whether the demographic fields are completed or not, this form must be submitted with at least the applicant's name completed.*

(1) Grants.gov Submissions: Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. First time registration can take between three business days and four weeks. For more information about registering for Grants.gov, see http://www.darpa.mil/work-with-us/additional-baa.

(2) Hard-copy Submissions: Proposers electing to submit grant or cooperative agreement proposals as hard copies must complete the SF 424 R&R form (Application for Federal Assistance,) available on the Grants.gov website http://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf

(2) For Proposers Requesting Procurement Contracts or OTs and Submitting to a DARPA-approved Proposal Submissions Website

Unclassified proposals sent in response to this BAA may be submitted via DARPA's BAA Website (https://baa.darpa.mil). Note: If an account has already been created for the DARPA BAA Website, this account may be reused. If no account currently exists for the DARPA BAA Website, visit the website to complete the two-step registration process. Submitters will need to register for an Extranet account (via the form at the URL listed above) and wait for two separate e-mails containing a username and temporary password. After accessing the Extranet, submitters may then create an account for the DARPA BAA website (via the "Register your Organization" link along the left side of the homepage), view submission instructions, and upload/finalize the proposal. Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; proposers should start this process as early as possible.

All unclassified concepts submitted electronically through DARPA's BAA Website must be uploaded as zip files (.zip or .zipx extension). The final zip file should be no greater than 50 MB in size. Only one zip file will be accepted per submission, and submissions not uploaded as zip files will be rejected by DARPA.

Classified submissions and proposals requesting grants or cooperative agreements should NOT be submitted through DARPA's BAA Website (https://baa.darpa.mil), though proposers will likely still need to visit https://baa.darpa.mil to register their organization (or verify an existing registration) to ensure the BAA office can verify and finalize their submission.

Technical support for DARPA's BAA Website may be reached at BAAT_Support@darpa.mil, and is typically available during regular business hours, Eastern Time.

For a proposal that includes both classified and unclassified information, the proposal may be separated into an unclassified portion and a classified portion. The proposal should use the unclassified portion to the maximum extent reasonable. The unclassified portion can be submitted through the DARPA BAA Website, per the instructions above. The classified portion must be mailed separately, according to the instructions outlined in the "Security Information" section above. If a classified proposal may not be partitioned into classified and unclassified portions, then submit according to the instructions outlined in the "Security Information" section above.

When a proposal includes a classified portion, and when able according to security guidelines, we ask that proposers send an e-mail to HR001121S0005@darpa.mil as notification that there is a classified portion to the proposal. When sending the classified portion via mail according to the instructions outlined in the "Security Information" section above, proposers should submit an original and six (6) hard copies of the classified portion of their proposal and two (2) CD-ROMs containing the classified portion of the proposal as a single searchable Adobe PDF file.

Please ensure that all CDs are well-marked. Each copy of the classified portion must be clearly labeled with HR001121S0005, proposer organization, proposal title (short title recommended), and Copy _ of _.

> (3) For Proposers Requesting Procurement Contracts or OTs and Submitting Hard Copies

Proposers may submit hard copies of their proposal. Proposers opting to submit hard copies must submit an original and six (6) hard copies of the proposal but no more than nine (9) of the full proposal and two (2) electronic copies of the full proposal [in PDF (preferred)] on a CD-ROM. Each copy must be clearly labeled with HR001121S0005, proposer organization, proposal title (short title recommended), applicable handling caveat (e.g., Proprietary, CUI, or classification), and Copy _ of 2. All hard copies must be on 8 ½ by 11 paper with any applicable banner and portion markings.

5. Funding Restrictions

Preaward costs will not be reimbursed unless a preaward cost agreement is negotiated prior to award.

6. **Other Submission Requirements**

DARPA will post a consolidated Frequently Asked Questions (FAQ) document. To access the posting go to: http://www.darpa.mil/work-with-us/opportunities. Under the HR001121S0005 summary will be a link to the FAQ. Submit your question/s by e-mail to HR001121S0005@darpa.mil. Questions must be received by the FAQ/Questions due date listed in Part I, Overview Information.

V. Application Review Information

A. Evaluation Criteria

Proposals will be evaluated using the following criteria, listed in descending order of importance:

1. Overall Scientific and Technical Merit

The proposed technical approach is innovative, feasible, achievable, and complete. The Government will review the proposed program approach for the novel technology to assess the extent to which the proposal demonstrates understanding of the RACER-Sim program vision and the technical and programmatic challenges.

The Government will review the proposed RACER-Sim technical approach to assess the extent to which the proposed approach addresses RACER-Sim program goals. The Government will review the proposer's vision for addressing the RACER-Sim challenges and the unique features in the proposed approach towards addressing program objectives.

The Government will review the analysis, data and other substantiating information regarding the proposer's RACER-Sim novel technology to assess the technical maturity, effectiveness and feasibility of the proposed RACER-Sim novel technology and development approach to achieve the proposed Phase 1 objectives.

The Government will also review the proposed approach to achieving the Phase 2 metrics and the extent to which the proposal information substantiates the capability to do so.

The Government will review the development approach to assess the extent to which the plan adequately addresses key risk areas for the proposed RACER-Sim approach. The Government will assess whether the development approach provides a robust basis for tracking system maturation and risk throughout the program. The Government will assess whether key risk reduction activities and demonstrations are appropriately defined and adequately validate technologies and metrics. The Government will also assess whether the proposer-defined metrics and milestones are well defined, achievable, and adequately capture the necessary development to achieve program objectives.

The Government will assess whether the management approach includes a robust plan for software development management, tracking program technical and schedule progress, program control, subcontractor management and integration, and other key management elements.

The Government will also assess whether the Phase 1 SOW is credible, executable, and addresses the Phase 1 objectives, deliverables, program metrics. The Government will assess the extent to which the SOW sufficiently details activities and are traceable to the cost proposal.

Lastly, the Government will review the extent to which initial Phase 2 program plan is feasible, addresses Phase 2 objectives and metrics, and can be accomplished within Phase 2 schedule objectives.

2. Potential Contribution and Relevance to the DARPA Mission

The potential contributions of the proposed effort are relevant to the national technology base. Specifically, DARPA's mission is to make pivotal early technology investments that create or prevent strategic surprise for U.S. National Security.

This Government will assess the extent to which the proposed RACER-Sim technologies and deliverables support the objective of developing and demonstrating the capability for real world autonomous UGVs to maneuver in unstructured off-road terrain at speeds that are no longer limited by the autonomy software or processing time, but only by considerations of sensor limitations, vehicle mechanical limits, and safety.

This evaluation will take into consideration the extent to which the proposed intellectual property (IP) rights will potentially impact the Government's ability to use, extend, and transition the simulation technologies and source code developed under the RACER-Sim program to the research, industrial, and operational military communities.

The Government will review the proposed simulation technologies to assess the extent to which the proposed program is consistent with DARPA's program vision and is relevant to a future operational capability. This assessment will consider the maturity of the capability planned to be achieved in Phase 1, the military utility and transition potential of the envisioned Phase 2 products, and the scope of additional development that would be required to achieve an operational capability.

3. Proposer's Capabilities and/or Related Experience

The proposer's prior experience in similar efforts clearly demonstrates an ability to deliver products that meet the proposed technical performance within the proposed budget and schedule. The proposed team has the expertise to manage the cost and schedule. Similar efforts completed/ongoing by the proposer in this area are fully described including identification of other Government sponsors.

The Government will review the capabilities and expertise of the proposed team to assess whether the team has adequate expertise across the range of disciplines required to successfully perform the RACER-Sim program, including previous experience on programs with a similar level of complexity and in key risk areas. The Government will assess whether the proposal provides evidence of strengths in the technical areas required to develop their system level

solution including, as appropriate: software development, autonomous systems development and integration, software- and hardware- in-the-loop simulation, test environments, field experiments with autonomous systems, and autonomous decision frameworks. Specifically related to autonomous systems development, the Government will assess the proposer's capabilities and expertise relating to field robotic perception, planning, control and implementation of recent machine learning and artificial intelligence approaches, and the ability to develop novel solutions in these areas related to RACER-Sim objectives. The Government will also assess the extent to which the proposed team has facilities and corporate resources to accomplish Phases 1 and 2.

The Government will review the qualifications and relevant experience of key personnel, including at a minimum: the Program Manager, Principal Investigator, and functional area leads, as proposed. The Government will assess whether key personnel expertise and proposed level of effort are consistent with their proposed role on the program. The Government will also assess the extent to which key personnel have direct experience on the programs cited as the team's experience base.

4.   Realism of Proposed Cost and Schedule

The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the solicitation. The proposed costs are consistent with the proposer's Statement of Work and reflect a sufficient understanding of the costs and level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs and the basis for the estimates).

The proposed schedule aggressively pursues performance metrics in an efficient time frame that accurately accounts for the anticipated workload. The proposed schedule identifies and mitigates any potential schedule risk.

The proposer substantiates that they can realistically complete the proposed work within the cost and schedule provided in the proposal.

It is expected that the effort will leverage all available relevant prior research in order to obtain the maximum benefit from the available funding. For efforts with a likelihood of commercial application, appropriate direct cost sharing may be a positive factor in the evaluation. DARPA recognizes that undue emphasis on cost may motivate proposers to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. DARPA discourages such cost strategies.

Government Furnished Material (GFM) costs are itemized and appropriately substantiated.

B.   Review of Proposals

1.   Review Process

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations based on the evaluation criteria listed in Section V.A and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals.

DARPA will conduct a scientific/technical review of each conforming proposal. Conforming proposals comply with all requirements detailed in this BAA; proposals that fail to do so may be deemed non-conforming and may be removed from consideration. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons.

Award(s) will be made to proposers whose proposals are determined to be the most advantageous to the Government, consistent with instructions and evaluation criteria specified in the BAA herein, and availability of funding.

2.   Handling of Source Selection Information

DARPA policy is to treat all submissions as source selection information (see FAR 2.101 and 3.104), and to disclose their contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements. Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements.

3.   Federal Awardee Performance and Integrity Information (FAPIIS)

Per 41 U.S.C. 2313, as implemented by FAR 9.103 and 2 CFR § 200.205, prior to making an award above the simplified acquisition threshold, DARPA is required to review and consider any information available through the designated integrity and performance system (currently FAPIIS). Awardees have the opportunity to comment on any information about themselves entered in the database, and DARPA will consider any comments, along with other information in FAPIIS or other systems prior to making an award.

VI.   Award Administration Information

A.   Selection Notices and Notifications

1.   Abstracts

DARPA will respond to abstracts with a statement as to whether DARPA is interested in the idea. If DARPA does not recommend the proposer submit a full proposal, DARPA will

provide feedback to the proposer regarding the rationale for this decision. Regardless of DARPA's response to an abstract, proposers may submit a full proposal. DARPA will review all conforming full proposals using the published evaluation criteria and without regard to any comments resulting from the review of an abstract.

2. Proposals

After the evaluation of a proposal is complete, the proposer will be notified that (1) the proposal has been selected for funding pending award negotiations, in whole or in part, or (2) the proposal has not been selected. These official notifications will be sent via email to the Technical POC and/or Administrative POC identified on the proposal coversheet.

B. Administrative and National Policy Requirements

1. Meeting and Travel Requirements

There will be a program kickoff meeting and all key participants are required to attend. Performers should also anticipate regular program-wide PI Meetings and periodic site visits at the Program Manager's discretion.

2. FAR and DFARS Clauses

Solicitation clauses in the FAR and DFARS relevant to procurement contracts and FAR and DFARS clauses that may be included in any resultant procurement contracts are incorporated herein and can be found at http://www.darpa.mil/work-with-us/additional-baa.

3. Controlled Unclassified Information (CUI) on Non-DoD Information Systems

Further information on Controlled Unclassified Information identification, marking, protecting, and control, to include processing on Non-DoD Information Systems, is incorporated herein and can be found at http://www.darpa.mil/work-with-us/additional-baa.

4. Representations and Certifications

In accordance with FAR 4.1102 and 4.1201, proposers requesting a procurement contract must complete electronic annual representations and certifications at https://www.sam.gov/.

In addition, all proposers are required to submit for all award instrument types (i.e., procurement contract, cooperative agreement, grant, and Other Transaction for Prototype) supplementary DARPA-specific representations and certifications at the time of proposal submission. See http://www.darpa.mil/work-with-us/reps-certs for further information on required representation and certification depending on your requested award instrument.

5. Terms and Conditions

For terms and conditions specific to grants and/or cooperative agreements, see the DoD General Research Terms and Conditions (latest version) at http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal/grants-terms-conditions and the supplemental DARPA-specific terms and conditions at http://www.darpa.mil/work-with-us/contract-management#GrantsCooperativeAgreements.

C.   Reporting

The number and types of reports will be specified in the award document, but will include as a minimum monthly technical and financial status reports. The monthly status reports must include documentation of progress toward accomplishing program metrics. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed on before award. Reports and briefing material will also be required as appropriate. A Final Report that summarizes the project and tasks will be required at the conclusion of the performance period for the award, notwithstanding the fact that the research may be continued under a follow-on vehicle. At least one copy of each report will be delivered to DARPA and not merely placed on a SharePoint site.

D.   Electronic Systems

1.   Wide Area Work Flow (WAWF)

Performers will be required to submit invoices for payment directly to https://wawf.eb.mil, unless an exception applies. Performers must register in WAWF prior to any award under this BAA.

2.   i-Edison

The award document for each proposal selected for funding will contain a mandatory requirement for patent reports and notifications to be submitted electronically through i-Edison (https://public.era.nih.gov/iedison).

VII.   Agency Contacts

For information concerning agency level protests see http://www.darpa.mil/work-with-us/additional-baa#NPRPAC.

Administrative, technical, or contractual questions should be sent via e-mail to HR001121S0005@darpa.mil. All requests must include the name, e-mail address, and phone number of a point of contact.

The BAA Coordinator may be reached at:
     HR001121S0005@darpa.mil
     DARPA/TTO
     ATTN: HR001121S0005
     675 North Randolph Street
     Arlington, VA 22203-2114

VIII. Other Information

A. Collaborative Efforts

Collaborative efforts/teaming are encouraged. Interested parties should submit a one-page profile with their contact information, a brief description of their technical capabilities, and the desired expertise from other teams, as applicable.

B. Standard Cost Proposal Spreadsheets

The Government strongly encourages that proposers use the provided MS Excel™ DARPA Standard Cost Proposal Spreadsheet in the development of their cost proposals. A customized cost proposal spreadsheet may be an attachment to this solicitation. If not, the spreadsheet can be found on the DARPA website at http://www.darpa.mil/work-with-us/contract-management (under "Resources" on the right-hand side of the webpage). All tabs and tables in the cost proposal spreadsheet should be developed in an editable format with calculation formulas intact to allow traceability of the cost proposal. This cost proposal spreadsheet should be used by the prime organization and all subcontractors. In addition to using the cost proposal spreadsheet, the cost proposal still must include all other items required in this announcement that are not covered by the editable spreadsheet. Subcontractor cost proposal spreadsheets may be submitted directly to the Government by the proposed subcontractor via e-mail to the address in Part I of this solicitation. **Using the provided cost proposal spreadsheet will assist the Government in a rapid analysis of your proposed costs and, if your proposal is selected for a potential award, speed up the negotiation and award execution process**.