



**Broad Agency Announcement**  
**DARPA Triage Challenge**  
**BIOLOGICAL TECHNOLOGIES OFFICE**  
**HR001123S0011**  
**November 17, 2022**

**TABLE OF CONTENTS**

**PART I: OVERVIEW INFORMATION .....3**

**PART II: FULL TEXT OF ANNOUNCEMENT .....4**

**1 Funding Opportunity Description.....4**

1.1 Challenge Overview ..... 4

1.2 Challenge Tracks ..... 10

1.3 DARPA Triage Challenge BAA Scope..... 18

1.4 Infrastructure ..... 24

**2 Award Information.....25**

2.1 General Award Information ..... 25

2.2 Fundamental Research ..... 26

**3 Eligibility Information.....31**

3.1 Eligible Applicants ..... 31

3.2 Organizational Conflicts of Interest ..... 32

3.3 Cost Sharing/Matching..... 33

**4 Application and Submission Information .....33**

4.1 Address to Request Application Package..... 33

4.2 Contact and Form of Application Submission ..... 33

4.3 Funding Restrictions..... 49

4.4 Other Submission Information ..... 49

**5 Application Review Information .....49**

5.1 Evaluation Criteria ..... 49

5.2 Review of Proposals..... 50

**6 Award Administration Information .....51**

6.1 Submission Status Notifications..... 51

6.2 Administrative and National Policy Requirements ..... 51

6.3 Reporting ..... 52

6.4 Electronic Systems ..... 52

**7 Agency Contacts.....53**

**8 Other Information .....53**

8.1 University Funding..... 53

8.2 Information Day ..... 54

**9 APPENDIX 1 – Volume II checklist .....55**

## PART I: OVERVIEW INFORMATION

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Biological Technologies Office (BTO)
- **Funding Opportunity Title** – DARPA Triage Challenge (this BAA is soliciting abstracts and proposals for [Tracks A and D](#) only, other Tracks are referenced for informational purposes – see [Challenge Website](#) for official details)
- **Announcement Type** – Initial Announcement
- **Funding Opportunity Number** – HR001123S0011
- **North American Industry Classification System (NAICS)** – 541714
- **Catalog of Federal Domestic Assistance Numbers (CFDA)** – 12.910 Research and Technology Development
- **Dates**
  - Posting Date: **November 17, 2022**
  - Proposal Abstract Due Date and Time: **December 20, 2022, 4:00 PM ET**
  - Full Proposal Due Date and Time: **February 13, 2022, 4:00 PM ET**
  - BAA Closing Date: **February 13, 2022**
  - Information Day: **November 29, 2022**
- **Concise description of the funding opportunity** – The goal of the DARPA Triage Challenge is to galvanize discovery of novel traumatic injury signatures to enhance triage decision-making in mass-casualty settings. DARPA is soliciting innovative proposals in the domain of signature identification for primary and secondary triage.
- **Table 1. Anticipated individual awards**

Technical Area	# of Awards	Approximate Award per Team (Base + all phases)
Track A - Primary Triage Real-World Competition	Multiple	\$2.25M
Track D - Secondary Triage Competition	Multiple	\$1.5M

- **Prizes:** Approximately \$7 M
- **Types of instruments that may be awarded** – Procurement contract, cooperative agreement, or other transaction.
- **Agency contact**

The BAA Coordinator for this effort may be reached at:  
[TriageChallenge@darpa.mil](mailto:TriageChallenge@darpa.mil)  
DARPA/BTO  
ATTN: HR001123S0011  
675 North Randolph Street  
Arlington, VA 22203-2114
- **Challenge Website:** <https://triagechallenge.darpa.mil>

## **PART II: FULL TEXT OF ANNOUNCEMENT**

### **1 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 laws and regulations, and any negotiations and/or awards for procurement contracts will use procedures under FAR 15.4, Contract Pricing, as specified in the BAA.

#### **1.1 CHALLENGE OVERVIEW**

Under the authority of 10 U.S.C. §4025 to stimulate innovations using prize competition, the DARPA Triage Challenge will use a series of challenge events to drive breakthrough innovations in the identification of physiological features (“signatures”) of injury. These new signatures will help medical responders perform scalable, timely, and accurate triage. Of particular interest are mass casualty incidents (MCIs), in both civilian and military settings, when medical resources are limited relative to the need.

The DARPA Triage Challenge’s long-term vision is 1) an initial, or primary stage of MCI triage supported by sensors on stand-off platforms, such as uncrewed aircraft vehicles (UAVs) or uncrewed ground vehicles (UGVs), and algorithms that analyze sensor data in real-time to identify casualties for urgent hands-on evaluation by medical personnel; followed by 2) a secondary stage, after the most urgent casualties have been treated, supported by non-invasive sensors placed on casualties and algorithms that analyze sensor data in real-time to predict the need for life-saving interventions (LSIs) by medical personnel. Injury information provided by these sensors could be integrated with other information about the scene to accumulate evidence about the injury mechanism and characteristics in order to enhance overall situational awareness, and to focus further physiological interventions.

To advance progress towards this vision, the DARPA Triage Challenge aims to bring together multi-disciplinary teams and industries that will identify physiological signatures and develop sensor and algorithm strategies for complex MCI settings. Teams participating in the DARPA Triage Challenge will be tasked with developing and demonstrating strategies for capturing high-value signatures for either primary or secondary triage, or for both. While aspects of the DARPA Triage Challenge involve sensors and sensor-delivery platforms, the priority is the development of physiological signatures and models to detect them, not the development of new sensor or platform technology. Signatures are defined as patterns in the sensor data that reflect or predict injuries of high importance for triage assessments.

##### **1.1.1 Motivation**

Traumatic injuries incurred in diverse military and civilian settings such as combat, attacks on gatherings, accidents, and natural disasters may be fatal if not quickly identified and treated. Medical responders use triage protocols to rapidly prioritize casualties for immediate LSIs, such as treatment of significant bleeding and management of airway injuries. Triage is difficult under any circumstance, but MCIs in complex settings pose significant challenges to current triage capabilities. For example, overwhelmingly large numbers of casualties relative to medical resources on-hand; dangers to first-responders on the scene, such as unstable infrastructure,

contaminants, or hostile fire; and environmental factors that make casualties harder to find and assess, such as rubble or darkness, may prolong the response. Medical personnel may miss the time window for implementing LSIs.

Further complicating triage in such events is a poor scientific understanding of early physiological response to traumatic injury. Physiological signatures that indicate the need for LSIs in patients who do not exhibit obvious signs of serious injury are not well established, impairing decisions about allocation of medical resources at the scene and the types of facilities where casualties should be sent for treatment.

In summary, there is an immediate need for new triage tools to support medical decision-making that can scale to MCIs. In response, the DARPA Triage Challenge seeks to enable medical responders to save lives in MCIs by 1) exploiting stand-off sensors to rapidly and autonomously provide information needed in primary triage, and 2) providing continued monitoring to predict the need for LSIs in secondary triage. The DARPA Triage Challenge will focus on life-threatening conditions that medics are trained to treat, including hemorrhage and airway injuries.

### 1.1.2 Challenge Goals

The primary goal of the DARPA Triage Challenge is to identify physiological signatures of traumatic injuries that can be captured with stand-off and contact-based sensors to enable medical responders to maximize lives saved and optimize the use of medical resources in complex MCI settings. The priority is development of these physiological signature-based models, not development of new sensor or sensor platform technology. Of particular interest are signatures derived from multi-modal sensing approaches which can enhance robustness against degradation of individual sensors, increase confidence through corroborating data from multiple sensors, and provide deeper insight into physiological status with complementary sensor inputs.

An additional goal of the DARPA Triage Challenge is to foster new cross-disciplinary collaborations around MCI preparedness. The DARPA Triage Challenge will bring together communities with expertise in triage and emergency medical response, tactical combat casualty care, trauma physiology, and a diverse array of sensor and algorithm technologies that will live beyond the DARPA Triage Challenge and continue to deliver innovative technologies that support medical responders. To encourage broad participation across disciplines, the DARPA Triage Challenge includes both real-world and virtual competitions. Tracks are available for both DARPA-funded and self-funded teams (section 1.2). The purpose of this BAA is to solicit proposals for **DARPA-funded teams only**. Self-funded teams will find information on the structure and timeline for the challenge here but should refer to the DARPA Triage Challenge [website](#) for official details and how to register as participants.

### 1.1.3 Challenge Description

#### 1.1.3.1 Triage Signatures

The notional DARPA Triage Challenge primary triage setting is the first few minutes of an MCI, with automated capture and processing of data from stand-off sensors to support medical responders in evaluating an overwhelming number of casualties. DARPA expects to provide the training data and test data necessary for the workshops and competition events, though competitors

may use or develop their own training data (see [1.4.2](#); DARPA will not fund competitors to conduct animal or human subjects research). Sensor-algorithm systems should assess aspects of victim status that medical personnel would evaluate in this initial, rapid stage of triage, such as ability to move, severe hemorrhage, respiratory distress, and alertness. Examples of stand-off strategies could include computer vision, motion tracking, remote photoplethysmography, lidar assessment of respiratory or cardiac activity, and speech recognition, among other potential strategies. Algorithms should be trained to integrate data from multiple stand-off sensor streams and generate a real-time assessment of victim status, most importantly the need for immediate LSIs that medical personnel are trained and equipped to provide in military and civilian pre-hospital settings, such as external hemorrhage control and airway interventions.

The notional DARPA Triage Challenge secondary triage setting is a casualty collection point, Role 1 medical facility, or emergency department, after primary triage and immediate LSIs; patient status is further refined and continuously monitored to identify changes in patient condition requiring urgent intervention. Algorithms should assess signatures indicating need for LSIs in data streams from various clinical sensors, such as continuous high-frequency vital sign waveforms from multi-modal monitors and other devices currently used in pre-hospital and emergency department assessments. Algorithms should be trained to integrate data from multiple sensor streams and generate real-time predictions of LSIs that medical personnel are trained and equipped to provide in military and civilian pre-hospital and hospital settings. Algorithm strategies could include compensatory reserve and other physiology-based concepts, data-driven models, or other approaches that could enhance secondary triage decision-making.

The DARPA Triage Challenge Primary triage domain includes real-world and virtual competitions, while the Secondary triage domain is virtual only. Additionally, a Challenge Infrastructure component includes Independent Verification and Validation (IV&V) teams and DARPA's Research Infrastructure for Trauma with Medical Observations (RITMO) program, which provides data for use in the Secondary triage competition.

The DARPA Triage Challenge is a three-year effort with three sequential 12-month phases for Primary triage and Secondary triage in parallel, each culminating in a challenge event (Figure 1). Full proposals submitted in response to HR001123S0011 must address all phases.

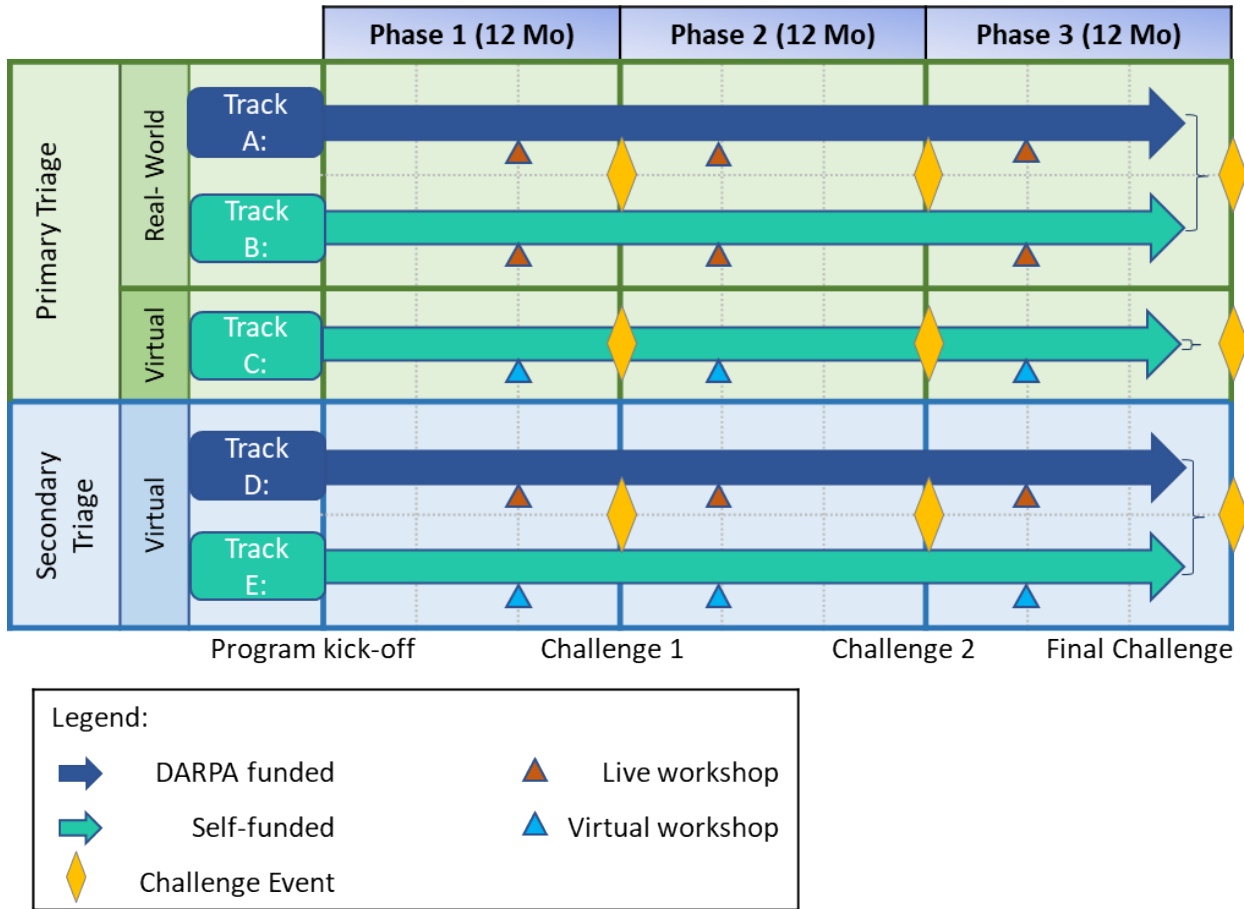


Figure 1: DARPA Triage Challenge structure and timeline. Please see [Section 1.2](#) for full description of the tracks.

Phases 1 and 2 will end with Challenge 1 and Challenge 2, respectively, and Phase 3 will conclude with the Final Challenge. Prizes will be awarded to the top-performing teams in each challenge event based on eligibility (see [Section 1.1.4](#)). In each phase, competitors will develop algorithms that detect and characterize signatures for primary and/or secondary triage. Competitors may participate in the Primary Triage competition, or the Secondary Triage competition, or both competitions (with restrictions noted in [Section 1.3](#) below).

#### 1.1.4 Prizes

Table 2: Prize structure\*.

Domain	Tracks	Challenge 1:	Challenge 2:	Final Challenge:
Primary Triage	Track A DARPA-Funded (solicited by this BAA)	<i>(not eligible)</i>	<i>(not eligible)</i>	Up to \$2.5M prize pool

	Track B Self-Funded	Up to \$200k prize pool	Up to \$500k prize pool	
	Track C Self-Funded	Up to \$100k prize pool	Up to \$500k prize pool	Up to \$1M prize pool
Secondary Triage	Track D DARPA-Funded (solicited by this BAA)	<i>(not eligible)</i>	<i>(not eligible)</i>	Up to \$1.5M prize pool
	Track E Self-Funded	Up to \$200k prize pool	Up to \$500k prize pool	

*\*The dollar amount listed for a prize pool is divided among the top-performing teams in that challenge event. The number of prizes per event and distribution of the pool across top-performing teams will be determined closer to the event.*

While all teams are eligible for prizes in the Final Challenge, only self-funded teams are eligible for prizes in Challenges 1 and 2. Prize pools will be divided among the top three eligible teams in the relevant competitions. The Government's obligation for prizes under the DARPA Triage Challenge is subject to the availability of appropriated funds from which payment for prize purposes can be made. No legal liability on the part of the Government for any payment of prizes may arise unless appropriated funds are available to DARPA for such purposes.

Please see [Section 1.2](#) for full description of the tracks.

### 1.1.5 DARPA Triage Challenge Events

Multiple events will be held each year, with a mix of in-person, virtual, and hybrid formats (Table 3). The format is subject to change depending on public safety conditions (e.g., COVID-19 rates).

Table 3: DARPA Triage Challenge list of events.

Event	Primary Triage - Real-World Track A	Primary Triage - Real-World Track B	Primary Triage - Virtual Track C	Secondary Triage Track D	Secondary Triage Track E	Estimated duration
<b>Phase 1</b>						
<b>Program Initiation</b>	In-person	N/A	N/A	In-Person	N/A	2 days
<b>Challenge Kickoff</b>	Virtual	Virtual	Virtual	Virtual	Virtual	2 days
<b>Workshop - Month 8</b>	In-person	In-person	Hybrid	In-person	Hybrid	4 days
<b>Challenge 1 - Month 12</b>	In-person	In-person	Virtual	Virtual	Virtual	5 days
<b>Phase 2</b>						
<b>Workshop - Month 4</b>	In-person	In-person	Hybrid	In-person	Hybrid	4 days



<b>Challenge 2 - Month 12</b>	In-person	In-person	Virtual	Virtual	Virtual	5 days
<b>Phase 3</b>						
<b>Workshop - Month 4</b>	In-person	In-person	Virtual	In-person	Virtual	4 days
<b>Final Challenge - Month 12 - Preliminary Rounds</b>	In-person	In-person	Virtual	Virtual	Virtual	4 days
<b>Final Challenge - Month 12 - Finalists only</b>	In-person	In-person	In-person	In-person	In-person	1 day

### 1.1.5.1 Program Initiation Meeting

DARPA will hold a Program Initiation Meeting for contracted Track A and Track D teams to discuss technical approaches and execution plans, anticipated to occur in early Fall 2023 upon contract award.

### 1.1.5.2 Challenge Kickoff

DARPA will hold a public event shortly after the Program Initiation Meeting to mark the official kickoff of the DARPA Triage Challenge and announce the structure, rules, important dates, and prizes for the three challenge events, for all DARPA Triage Challenge tracks. Further details of the Challenge Kickoff event will be provided at a later date.

### 1.1.5.3 Technical Workshops

DARPA encourages vibrant information exchange and collaborative interactions among all DARPA Triage Challenge participants, to include DARPA technical staff, representatives from Challenge Teams, infrastructure developers and other Government Partners. To that end, DARPA will host at least one workshop in each phase to offer a forum for community building and cross-pollination of technical ideas and approaches:

*Primary Triage Competition:* In each phase (8 months into Phase 1, 4 months into Phases 2 and 3) DARPA will host a hybrid in-person and virtual workshop, with the physical site (Continental United States) identified no later than 3 months before the workshop (Track A competitors should plan to attend in-person). This will include live system integration practice sessions for real-world competitors to test their sensors and systems in simulated casualty scenes similar to the next challenge event, and virtual practice sessions for Primary Triage-Virtual competitors to test their algorithms in simulated casualty scenes similar to the next challenge event. The practice sessions will be followed by a “lessons learned” discussion for all tracks and an opportunity to discuss real-world needs with Government partners in a hybrid format.

*Secondary Triage Competition:* In each phase (8 months into Phase 1, 4 months into Phases 2 and Phase 3, DARPA will host a hybrid in-person and virtual workshop, with the physical site (continental United States) identified no later than 6 months before the workshop (Track D competitors should plan to attend in-person). This will include opportunities to interact with RITMO performers providing data for the Secondary triage challenge, to develop a better

understanding of data-collection setting and procedures and provide feedback on the potential utility of the data for the DARPA Triage Challenge.

#### 1.1.5.4 Challenge Events

The DARPA Triage Challenge will host Challenge 1, Challenge 2 and the Final Challenge event for both Primary and Secondary triage competitions, which will assess each competing team’s approach.

*Primary Triage - Real-World Competition:* Teams in Track A and Track B will bring their systems to a physical site (continental United States), to be identified no later than 6 months before each event. Track A competitors should plan (in their proposals) to travel to Challenge 1, Challenge 2, and the Final Challenge in addition to the 3 pre-challenge workshops described above.

*Primary Triage - Virtual Competition, Secondary Triage:* virtual track teams in Tracks C, D, and E will compete remotely via online submissions for each event. Details on submitting software and competition execution will be provided at a later date; teams can expect to submit software products for execution and evaluation by DARPA. The final round of the Final Challenge for the virtual competitors will be co-located and concurrent with the Real-World Final Challenge. Therefore, Track D competitors should plan in their proposals for travel to attend and support their effort at the Final Challenge venue.

#### Post-Challenge Hot Wash

Following each Challenge, DARPA will host a hybrid ‘lessons learned’ session open to all teams that competed.

### 1.2 Challenge Tracks

Competitors may enter the DARPA Triage Challenge via five distinct tracks outlined in Table 4. The Challenges are organized into three competitions (Primary Triage-Real-World, Primary Triage-Virtual, and Secondary Triage) with tracks for DARPA-funded (Tracks A and D) and self-funded competitors (Tracks B, C and E).

Table 4: Descriptions of the DARPA Triage Challenge Tracks.

Problem Domain	Competitions	Description	Track
Primary Triage Signature Competitions	Real World Competition	Competitors use autonomous systems with stand-off sensors to capture physiological data. Competitors’ algorithms identify injury patterns for triage.	Track A DARPA-funded
			Track B Self-funded
	Virtual Competition		Track C Self-funded

Secondary Triage Signature Competition	Virtual Competition	Using sensor data provided by RITMO via IV&V team, Competitors' algorithms predict life-saving interventions.	Track D DARPA-funded
			Track E Self-funded

**Track Specifications & Requirements**

Teams wishing to be DARPA-funded (Tracks A and D) must submit a proposal in response to this BAA. Please see [Section 1.3](#) for proposal scope. If submitting a proposal for both Track A and Track D, proposers must submit separate proposals. Submitters whose proposals to Track A or Track D are not selected for funding will still be eligible to participate as self-funded teams in Track B, C, or E, provided that they meet qualification criteria.

Teams planning to register for Track B, C, or E do not need to respond to this BAA and should instead plan to register on the DARPA Triage Challenge website when team registration opens. Rolling registration will be available starting one month prior to program kick-off.

Teams in all tracks will be required to qualify prior to each challenge event (qualification criteria to be posted on the website NLT 90 days prior to the qualification deadline). The qualification process is anticipated to constitute a short abstract providing details on the technical approach. Additionally, Track A and B competitors will be required to describe safety features and may need to demonstrate certain aspects of their systems to DARPA to verify safety and operator competency. Track A and B competitors should also be prepared to host DARPA personnel for site visits to verify competition readiness.

DARPA may fund up to seven (7) teams in Track A and up to six (6) in Track D. DARPA may adjust at its discretion the number of teams accepted to compete due to technical or funding limitations, the number of applications received, or other factors.

As described in [Section 1.1.4](#), DARPA-funded teams are not eligible for prizes in Challenge 1 and Challenge 2 but are eligible for prizes in the Final Challenge. Nevertheless, all teams in each competition are evaluated with the same criteria and scoring metrics independent of whether they are DARPA-funded or Self-funded.

**1.2.1 Primary triage competitions (Track A DARPA-funded, Track B Self-funded, and Track C Self-funded)**

The objective of the Primary triage competitions is to detect and identify physiological signatures of injury derived from data captured by stand-off sensors to enable early prioritization of casualties, allowing medical care professionals to quickly focus on the most urgent casualties. Competitors will develop algorithms that detect those signatures in real-time from stand-off sensor data to provide decision support appropriate for austere and complex pre-hospital settings. Of particular interest are signatures of acutely life-threatening conditions that medics are trained and equipped to treat during primary triage, such as hemorrhage and airway injuries.

*Real World (Tracks A and B)*

Challenge events for Real-World competitors will be physical simulations of casualty scenarios. Although the setting and complexity of challenge events will vary over the course of the DARPA Triage Challenge, the following features are expected to be maintained across events. Each competitor will have access to the same scenario, and no two (2) teams will operate in the same location simultaneously. Competitors will have only general information on the setting beforehand—for example, that it is a battlefield scenario, or a collapsed building following an earthquake. There will be actors and manikins exhibiting varying injuries and severity of injury (subject to the limitations of what can be simulated).

Competitors will use their stand-off sensors, robotic mobility platforms (e.g., UAVs, UGVs), and algorithms to autonomously process sensor data and provide real-time casualty identification and injury assessment. No part of a competitor's system may touch a casualty or manipulate the scene (e.g., clear rubble). Each scenario will have a time limit, with no scenario expected to have a duration greater than one hour. Scoring will be based on a combination of speed and accuracy measures as described in [Section 1.2.1.1](#).

At the beginning of each phase, DARPA will provide additional training data on the participant portal based on multimodal recordings of physical simulations of casualty scenarios similar to the end-of-phase challenge event. To assist Primary Triage Real-World competitors in developing their strategies, DARPA will host workshops at month 8 of Phase 1 and month 4 of Phases 2 and 3. These workshops will provide an opportunity for Real-World competitors to collect data from physical simulations of scenes similar to end-of-phase events. Real-world competitors should plan for 4 or 5 days of travel to each workshop and challenge event, each to be held at various locations in the continental United States. DARPA expects to provide the training data and test data necessary for the workshops and competition events, but competitors may use or develop their own training data (see [Section 1.4.2](#); DARPA will not fund competitors to conduct animal or human subjects research).

*Virtual (Track C)*

For Primary triage virtual competitors, DARPA will provide the same training data provided to Primary Triage Real-World competitors, starting at DARPA Triage Challenge kickoff. End-of-phase events will evaluate competitors using test data that is similar to the provided training data, but not shared in advance of the competition events. DARPA will hold virtual workshops for Primary triage virtual competitors on the same schedule as the Real-World workshops. DARPA will provide additional training data recorded at the workshops for the virtual track.

**1.2.1.1 Primary Triage: Scoring Criteria and Challenge Rules**

DARPA expects to release an initial DARPA Triage Challenge rules document with scoring criteria and competition rules by the Challenge kickoff. DARPA expects to apply the following context in its formulation.

The general scenario of interest for the Primary Triage competitions is an MCI where the number of casualties and/or the environment likely would preclude a timely initial assessment of each casualty by first responders. The competitions will include evaluations of autonomous stand-off approaches that assist responders in performing those initial hands-on assessments by rapidly

providing information on casualty location and injury classification. The urgency in completing the course objectives and providing near-real-time situational awareness updates will be a consistent focus of the competition.

Candidate scoring criteria include the following (not in priority order and not necessarily an exhaustive enumeration):

- Percent of casualties identified
- Accuracy in reporting casualty locations
- Accuracy of casualty injury classification
- Time to complete casualty assessments
- Identification of urgent casualties before the opportunity to address LSIs would have closed

Scoring of injury classification accuracy will focus on injuries that a medic would assess in their initial hands-on evaluation, which are largely consistent across field triage guidelines. For example, a medic would rapidly assess alertness; presence of immediately life-threatening injuries, such as massive hemorrhage and respiratory distress; and presence of a non-survivable injury pattern. Competitors may adopt a particular triage guideline to provide overall priority recommendations for each casualty (e.g., “Immediate”, “Delayed”, “Minimal”, “Deceased”), and these priorities may be included in the user interface for feedback from potential end-users ([Section 1.4.2](#)), but scoring is expected to be based on detection of injuries that would be needed to establish priority in any of the triage guidelines. DARPA expects to provide the specific injury patterns that competitors should detect along with the scoring criteria at Challenge Kickoff. The injury patterns are not expected to include injuries that are not of concern in primary triage, such as minor wounds and injuries that are not life-threatening, or accuracy of vital sign measurements beyond what would be needed to ascertain an immediate threat to life.

DARPA will tune the various competition design elements to drive innovation and investment, as described below. Proposals offering approaches that are versatile and robust to the complex environmental conditions found in real-world scenarios are of high interest to DARPA.

### **Competitor system requirements: Real-World**

Competitors will develop systems to provide real-time initial assessment of casualty status based on commercial off-the-shelf (COTS) or near-COTS stand-off collection and analysis of physiological data that can scale to MCIs. In the representative use case, human responders determine the courses of medical action, but the tools developed under this effort will provide information that could be used to support those decisions. A competitor’s system must include 4 key elements: sensor packs, sensor-delivery platforms, signature-identification algorithms and processing hardware, and a user interface. The system should be fieldable by a group of up to three responders, with additional systems or elements added to scale with incident size. Therefore, all system elements together must pack down to be carried by a single vehicle (car, sports utility vehicle, pickup truck), with individual components being easily portable by a single person.

DARPA is considering the possibility of providing access to a communications network during the competition events. Prospective teams should include a description of their networking approach and specifications in their proposals.

### 1.2.1.2 System Elements

#### *Sensor Packs*

DARPA expects that multi-modal approaches will be required to improve signature identification and address multiple challenge elements that could degrade the usefulness of any one sensor (e.g., environmental conditions, casualty pose). Various sensor modalities and combinations will be allowed, including but not limited to LIDAR, acoustic, visual, RF, IR, UV, radar, gravity, compass/magnetic, GPS, and chemical. DARPA anticipates that COTS or near-COTS sensors will be sufficient. Sensors must be capable of detecting the desired signatures from a minimum distance of 1 meter (for safety of MCI actors and may be subject to additional limitations on UAVs). All sensors elements must be skin- and eye-safe.

#### *Platforms*

In Phase 1, competitors may be permitted to teleoperate their mobile robotic platforms with up to one human operator per robotic platform. In later phases, teams will be limited to only one human operator who will be the only team member that will be permitted to communicate with the robotic platforms.

Robotic platforms, such as uncrewed aerial vehicles (UAVs) and uncrewed ground vehicles (UGVs), will carry the sensor packs and any associated computation and communications hardware. Additional computation may be run on an accessory computer at a command station. **It is expected that robotic platforms will need to operate autonomously to be effective in the MCI scenarios of interest to DARPA.** Some limited human interaction with the deployed robotic systems may be permitted, but DARPA expects to limit teams to only one human operator by Phase 3 of the competition. Platforms are not permitted to use tethers for power or communications, but it is expected that battery changes may be permitted. Platforms must not produce any visible illumination other than what is legally required for UAV flight.

Given the large-scale nature and complexity of MCIs, it is anticipated that a multi-agent and/or heterogeneous approach to navigating and searching the competition course could provide advantages over approaches that are limited to a single platform. The courses will be modeled after real events such as a battlefield, an earthquake with collapsed building, an explosion, or a mass shooting incident. Such situations may result in a variety of observation and navigation hazards, including rubble, immobile vehicles, constrained passages, large drops/climbs, and other casualty obscuring obstacles. By Phase 3, competitors should expect both constrained areas with human-crawable cross sections as well as larger open spaces that could include large debris or crowds.

It is expected that teams will be limited to a maximum of five deployed robotic systems. Given the complexity of real-world environments and the expectation of constrained passages, teams are encouraged to consider robotic platforms that do not exceed 1.5m in diameter and can be readily deployed by a small team.

For UAVs, it is anticipated that the total takeoff mass per UAV is expected to be less than 9kg. Proposals for larger or heavier UAVs should include a rationale for the decreased portability and

increased safety concerns related to larger platforms. Additional weight-based restrictions on the minimum stand-off distance of UAVs will be supplied in the DARPA Triage Challenge rules document. It is expected that altitude will be limited to 30 meters. UAVs must be [National Defense Authorization Act](#) (NDAA)-compliant.

#### *Signature-identification algorithms and processing hardware*

The algorithms that process sensor data and identify physiological signatures are the primary focus of this Challenge. DARPA will compare algorithm outputs to “ground truth,” which will be based on the scenario developed by the IV&V team to support scoring (e.g., accuracy of casualty detection, injury pattern classification). Competition scenarios are time-limited, and algorithm outputs will only be scored within the duration of the competition run. Therefore, algorithms should process sensor data to identify casualties and classify injury patterns in near-real time. A workstation at a “command post” external to the course may be used to run the algorithms in place of or in addition to any on-platform computation. Further information on workstation specifications will be provided in the DARPA Triage Challenge rules document.

#### *User interface*

While the main analysis may occur on a desktop, competitors must provide a user interface on a laptop or handheld device for real-time visualization of algorithm results. The intended user for the interface is a medic responding to the MCI. The interface should provide the situational awareness that a medic would need during primary triage in the early moments of an MCI, such as the locations and status of casualties who most urgently require LSIs. The device and appearance of the interface may not be part of the scoring metric, but stakeholders, potential end-users, and DARPA will consider the effectiveness of the user interface in evaluating the teams’ approaches.

### **1.2.1.3 Technical challenge elements**

The competition courses will be designed to assess performance across various challenge elements, including degraded sensing, obscuring obstacles, terrain obstacles, dynamic obstacles, and dynamic casualties. The challenges will become increasingly difficult from Phase 1 to Phase 3.

1. *Degraded Sensing:* The courses are expected to include elements that range from constrained passages to large fields, lighted areas to complete darkness, and wet to dusty conditions. Sensors will need to have the dynamic range to operate reliably in these environments. Dust, fog, mist, smoke, talking, flashing light, hot spots, and gunshot and explosion sounds are within scope of this challenge element. Extreme temperatures, fire, tremors, and hazardous materials are not expected to be within scope.
2. *Obscuring obstacles:* Casualties may be fully visible to partially obscured to completely obscured, such as buried under a shallow layer of rubble. Sensor modalities capable of penetrating rubble may have an advantage in such situations. Casualties may also be grouped with limbs overlapping, or may be interacting with live responders.
3. *Terrain Obstacles:* The competition scenarios will be held in realistic environments that may include natural or human-made materials; structured or unstructured clutter; and intact or collapsed structures and debris. Robotic mobility is not the focus of this challenge and it is expected that widely available outdoor robotic platforms will be capable of navigating



the competition environments. In some cases, more robust platforms may benefit from more direct navigation paths or closer approach paths to casualties.

4. *Dynamic Obstacles*: Live responders, ambulatory wounded, or other physical changes to the environment may be included to test the agility of the system autonomy to identify and assess casualties.
5. *Dynamic Casualties*: Some treatable injuries may rapidly become fatal, and delays in finding and assessing casualties may result in missing the window for effective LSI. While competitors are not expected to re-evaluate casualties for changes in status, casualties who are not evaluated within an appropriate timescale may have a change in status (for example, progression of untreated hemorrhage or airway injury).
6. *Endurance Limits*: It is expected that individual scenarios will run between 15-60 minutes. Teams may be permitted to replace batteries during their run, but teams should consider the implications of returning to the original launch location and redeploying their systems.

These technical challenge elements highlight key difficulties presented to systems that operate in MCI environments. DARPA is interested in proposals ([Section 1.3](#)) that offer holistic approaches to these challenge elements.

#### 1.2.2 Secondary triage competition (Track D DARPA Funded and Track E Self-funded)

The objective of the Secondary triage competition is to identify physiological signatures of injury derived from data captured by non-invasive sensors (contact-based or stand-off) to enable anticipatory decisions and prioritization for medical evacuation and care. Performers will develop algorithms that detect signatures in these data streams to provide decision support appropriate for austere and complex pre-hospital settings. Of particular interest are early signatures indicating a need for LSIs against conditions that medics are trained and equipped to treat during secondary triage, such as hemorrhage and airway injuries.

The Secondary triage competition is virtual only, and will use DARPA provided de-identified, multi-modal physiological data from trauma patients in diverse settings and cohorts provided by the DARPA **Research Infrastructure for Trauma with Medical Observations (RITMO)** program. DARPA will provide access to a subset of these data for algorithm training, and evaluate competitor algorithms on holdout test data in end-of-phase challenge events. DARPA expects to provide the training data and test data necessary for Secondary triage competition workshops and competition events, but competitors may use or develop their own training data (see [Section 1.4.2](#); DARPA will not fund competitors to conduct animal or human subjects research). Scoring may include metrics that combine speed (time to make a prediction) and accuracy measures ([Section 1.2.2.1](#)). Secondary triage competitors may be DARPA-funded or self-funded. Challenge events will become progressively more complex and realistic from Phases 1 to 3, as described in [Section 1.2.2.2](#).

DARPA will hold virtual workshops for Secondary triage competitors on the same schedule as the Primary Triage Real-World workshops.



DARPA may fund up to six (6) teams in Track D to participate in the competitions with a total of up to thirteen (13) teams in Tracks A and D combined (see Table 2). DARPA, at its discretion, may adjust the number of teams accepted to compete due to technical or funding limitations, the number of applications received, or other factors.

### **1.2.2.1 Secondary Triage: Scoring Criteria and Competition Rules**

The scoring criteria and competition rules are expected to be released at the DARPA Triage Challenge kickoff. DARPA expects to apply the following context in its formulation.

The general scenario of interest for the Secondary Triage Challenge is an MCI where medical responders have completed primary triage, including immediate LSIs, and now must monitor casualties in an austere setting while awaiting scarce MEDEVAC or definitive care resources. The challenge will evaluate non-invasive physiological signatures that provide early warning of the need for LSIs (within the first 24 hours of monitoring) to support anticipatory decision-making about resource allocation.

Candidate scoring criteria may include the following (not in priority order and not necessarily an exhaustive enumeration):

- Accuracy of LSI prediction (for any LSI and for more specific classifications, such as hemorrhage or airway interventions)
- Lead-time for LSI predictions
- Duration of monitoring and processing needed to generate LSI predictions

DARPA may tune the various competition design elements to drive innovation and investment, as described below. Proposals offering robust, versatile approaches that can adapt to such variable adjustments are of high interest to DARPA.

### **1.2.2.2 Technical Challenge Elements**

The challenge events will be designed to assess performance across various challenge elements, including multiple data sources, multiple data inputs, raw data, and degraded data. The challenges will become progressively more difficult from Phases 1 to 3.

1. *Multiple data sources*: With varied source populations, patient demographics, types of injury, and standard clinical operating procedures. Each data set may have a different standard set of sensor readings, with different added sensors in each phase of the DARPA Triage Challenge. Approaches must demonstrate robustness across a range of datasets and sensor types.
2. *Multiple data inputs*: Includes static data (e.g., mechanism of injury or anatomical injury pattern); multiple simultaneous, continuous streams of high-frequency waveforms; and potentially point-of-care imaging data.
3. *Raw data*: Data as it comes from the sensors (i.e., without any post-sensor cleaning), with the noise, aberrant values, and dropouts that occur in clinical environments.

4. *Degraded data*: DARPA may inject additional challenges that can be expected in battlefield and civilian pre-hospital settings, such as noisy, aberrant values, severe degradation or total loss of a particular sensor, to test the robustness of competitor strategies to such plausible scenarios.

### 1.3 DARPA TRIAGE CHALLENGE BAA SCOPE

**This BAA seeks proposals for DARPA-funded Primary Triage Real-World (Track A) and DARPA-funded Secondary Triage competitions (Track D) ONLY.**

DARPA-funded and self-funded teams will compete together in both Primary and Secondary triage Events (except for Primary triage virtual competition, which is self-funded only). DARPA will provide information for self-funded participation prior to DARPA Triage Challenge kickoff.

Proposals should include a 12-month base period in Phase 1 and 12-month option years for the subsequent phases.

Proposers may address one or both of the DARPA-funded tracks (i.e., Tracks A and/or D). If responding to both tracks, separate proposals must be submitted for each. Proposers are responsible for ensuring their team has the requisite technical expertise, capabilities, and facilities to address all aspects of their proposed technical areas. **Note:** As specified in the RITMO BAA ([HR001122S0043](#)), to avoid organizational conflicts of interest (OCI) or the appearance of an OCI, performers in RITMO or entities with access to data collected for RITMO will not be permitted to participate in the Secondary triage competitions unless they can demonstrate (1) measures to firewall individuals in the RITMO performer team; and/or (2) measures to firewall RITMO data from the individuals who would participate in the Secondary triage competitions. Proposers to DARPA Triage Challenge Track D must provide these demonstrations in their response to this BAA (instructions for Track E competitors will be provided by DARPA Triage Challenge kickoff). DARPA will evaluate the adequacy of these measures to determine if the proposed measures sufficiently mitigate potential OCI.

#### 1.3.1 Primary Triage: Stand-off casualty assessment

Track A competitors must define the modalities that will be used for stand-off capture of physiological data; the relevant data to be captured by the proposed modality; current sensor performance characteristics, including known advantages and disadvantages; and a strategy for achieving competition metrics, including mitigating any performance risks. In order to provide a comprehensive physiological assessment, competitors must incorporate multiple sensing modalities. These modalities must be considered safe for exposure to the casualties (e.g., skin- and eye-safe). Approaches must be resistant to real-world attenuators, such as low light, occlusion, and dust. They must be resilient to artifacts such as those resulting from vibration, motion, skin pigment, or topography. While any signature that aids in triage decision-making can be investigated, of particular interest to DARPA Triage Challenge are signatures that indicate a need for immediate LSIs that medics are trained and equipped to deliver in the field, including hemorrhage and airway injury. Approaches that focus solely on stand-off capture of vital signs without further analysis to support triage decisions are not of interest to this Challenge.

As the primary focus of the DARPA Triage Challenge is the development of physiological signatures and analytical algorithms, not hardware, proposers are encouraged to use COTS, or near-COTS sensors, and robotic platforms. However, if a proposing team has an aforementioned component under development that could be modified within the duration of the program and used in the challenge events, it can be included in the proposed approach.

### **1.3.1.1 Primary Triage Phases**

#### **Phase 1 (Base, 12 months)**

During the 12-month Phase 1, Track A teams will develop sensor packs, algorithms, and mobile robotic platforms for use in Challenge 1; engage with the IV&V team to inform design of MCI simulations; and identify risks and develop mitigation plans for Phase 2.

Additionally, teams will complete the baseline design, development, integration, and testing of their proposed solutions. The main development effort in this phase will culminate in a Critical Design Review (CDR) in month 7, during which the performer will present as deliverables a Technical Data Package. The Technical Data Package will include (as appropriate) the following items:

- Mechanical and electrical performance specifications, including weight, dimensions, power requirements and expected runtime.
- Computer-aided design (CAD) models of system(s) with all components (hardware, actuators, electronics)
- Specifications on all sensors
- Other design files (e.g., wiring diagrams, electrical board schematics)
- Bill of materials, quotes, lead times of all major components, build plan, and schedule
- Mechanical, electrical, and data architecture design, including diagrams of architectures, interfaces, protocols, etc.
- Other information that will allow the DARPA and IV&V team to evaluate design suitability

DARPA will convene a live workshop at Month 8 for competitors to test their systems on a course similar to the first challenge event, with a debrief to provide feedback to DARPA and IV&V partners on the data made available thus far and to ask questions.

Phase 1 culminates with Challenge 1, month 12, which is expected to be an approximately five-day event with teams deploying their system(s) in the competition course. The results from the event will be used by DARPA, in part, to inform the decision to fund the option for Phase 2. It is expected that at most five (5) DARPA-funded teams will advance to Phase 2.

#### **Phase 2 (Option, 12 months):**

During the 12-month Phase 2, Track A teams will continue their development efforts and participate in the second challenge event; continue engagement with the IV&V team; and identify risks and develop mitigation plans for Phase 3. Sensor-delivery platforms under autonomous control are required in Phase 2.

DARPA will convene a live workshop at Phase 2, Month 16 for competitors to test their systems on a course with similar features to Challenge 2, with a debrief to provide feedback to DARPA and IV&V partners on the data made available thus far and to ask questions.

Challenge 2 (month 24) will be more difficult than Challenge 1, with multiple scenario types and increasing difficulty in technical challenge elements, including the need to localize causalities before identifying signatures for triage, low lighting or darkness, and partial or full occlusions.

Team performance in Challenge 2 will be used by DARPA, in part, to inform the decision to fund the option for Phase 3. It is expected that at most four (4) DARPA-funded teams will advance to Phase 3.

**Phase 3 (Option, 12 months):**

During the 12-month Phase 3, Track A teams will continue their development efforts and engagement with the IV&V team, and participate in the Final Challenge. DARPA will convene a live workshop at Phase 3, Month 28, for competitors to test their systems on a course with features similar to those of the Final Challenge, with a debrief to provide feedback to DARPA and IV&V partners on the data made available thus far and to ask questions.

The Final Challenge will occur in 2 rounds at Phase 3, Month 36. The Final Challenge will include a preliminary round and a final round. The preliminary round will cover three (3) different mass casualty scenarios that together incorporate all of the technical challenge elements. This will be followed by a final round for the top finalists, the number to be determined closer to the Final Challenge. Upon completing the Final Challenge, Track A teams must provide a Final Technical Data Package, Final Report, and other deliverables as listed below.

**1.3.1.2 Primary Triage Real-World Track A Deliverables**

**Deliverable:** Phase 1 Technical Data Package

**Frequency:** At Critical Design Review

**Format:** Competitor-defined formats

**Description:** Provide a full design technical data package (see above for more details)

**Deliverable:** Platform Safety Report

**Frequency:** Month 7 of each phase

**Format:** Microsoft Word; supporting videos

**Description:** Demonstration of platform safety standards according to qualification and rules document. May include certification and safety interlocks.

**Deliverable:** Progress Report

**Frequency:** Monthly

**Format:** Microsoft PowerPoint

**Description:** Summary of technical accomplishments, planned actions for the next reporting period, graphical representations of work being completed, and relevant financial information

**Deliverable:** Post-Competition Report

**Frequency:** 1 month after each event

**Format:** Microsoft Word; supporting videos

**Description:** A technical report on the team's performance at the Circuit, including details on success, failures, analyses of causes, and video highlights of the event

**Deliverable:** Project Documentation

**Frequency:** As required

**Description:** Relevant documentation developed over the course of the program, e.g., registration materials, qualification packages, briefings, technical papers and presentations, posters, multimedia, graphics

**Deliverable:** Project Software

**Frequency:** Prior to Contract Completion

**Format:** Contractor-defined formats

**Description:** Stand-off triage algorithm delivered either as a package or linked to an open GitHub site

**Deliverable:** Final Report

**Frequency:** Prior to contract completion

**Format:** Microsoft Word; supporting videos

**Description:** Detailed description of the project effort, tasks, technical approach, testing and event results, analysis of results, and lessons learned. Include revised Technical Data Package incorporating any updates or additions since Phase 1

### 1.3.2 Secondary Triage: Predictive Signature Development

Proposers must define the analytical approaches they will use to generate real-time predictions of LSIs based on multimodal non-invasive (contact-based or stand-off) physiological monitoring data. Proposers should refer to the RITMO BAA ([HR001122S0043](#)) for DARPA's solicitation of proposals to plan their approach, as training data will be produced by RITMO performers. Specifications on the DARPA-provided data for training and challenge events will be announced by the DARPA Triage Challenge Kickoff. In short, DARPA expects to provide DARPA Triage Challenge Secondary triage competitors access to de-identified, large-volume, multimodal sensor, intervention, and medical outcome data obtained from trauma patients during the early post-injury period from multiple trauma settings. Additional patient information, such as demographic data and injury mechanism and pattern, may be available as well. DARPA will provide access to an initial dataset at DARPA Triage Challenge kickoff. At the end of Phase 1 and during Phase 2, we anticipate additional releases of datasets collected by RITMO performers that will include additional sensor data that could enhance development of predictive signatures. DARPA expects to provide the training data and test data necessary for Secondary triage competition workshops and competition events, but competitors may use or develop their own training data (see [Section 1.4.2](#); DARPA will not fund competitors to conduct animal or human subjects research).

#### 1.3.2.1 Secondary Triage Phases

##### Phase 1 (Base, 12 months)

Competitors will receive cloud-based access to existing (retrospective) datasets, likely comprising records for several thousand patients. These data will be used for algorithm training purposes only.

At a virtual Secondary triage challenge kickoff event, RITMO performers will describe their clinical settings and practices for new data collection to supply DARPA Triage Challenge 1, 2, and Final Challenge with training and evaluation data. The new datasets will include additional sensor data not part of the retrospective dataset. Secondary triage competitors will have opportunities to engage with RITMO performers to assist in refining their approaches.

In the second half of Phase 1, DARPA will provide competitors access to an initial set of newly collected data by RITMO performers. DARPA will convene a workshop at Phase 1, Month 8, for competitors to provide feedback to DARPA and RITMO performers on the data made available thus far and to ask questions.

Challenge 1 will occur at Phase 1, Month 12. Competitors will submit their algorithms, and DARPA will evaluate them on prospectively-collected holdout RITMO data. DARPA-funded and self-funded teams (Tracks D and E) will compete in this challenge. Team performance in Challenge 1 will be used by DARPA, in part, to inform the decision to fund the option for Phase 2. It is expected that at most five DARPA-funded teams will advance to Phase 2.

### **Phase 2 (Option, 12 months)**

In Phase 2, competitors will receive access to additional data collected by RITMO performers. These will be similar to the data used in Phase 1 with additional sensor dimensions. DARPA may impose additional challenges that can be expected in the battlefield and civilian pre-hospital settings, such as severe degradation or total loss of a particular sensor.

DARPA will convene a workshop in Phase 2, Month 16, for competitors to provide feedback to DARPA and RITMO performers on the data made available thus far and to answer questions.

Challenge 2 will occur in Month 24. As in Phase 1, competitors in Track D and E will submit their algorithms, and DARPA will evaluate them based on prospectively-collected holdout RITMO data. Team performance in the second event will be used by DARPA, in part, to inform the decision to fund the option for Phase 3. It is expected that at most four (4) DARPA-funded teams will advance to Phase 3.

### **Phase 3 (Option, 12 months)**

Competitors will receive access to additional collected data in Phase 3. The data will be similar to the data provided in Phase 2 but may include additional, non-invasive sensors not included in Phase 2 data. DARPA will inject additional challenges that can be expected in battlefield and civilian pre-hospital settings, such as severe degradation or total loss of a particular sensor.

DARPA will convene a workshop in Month 28 for competitors to provide feedback to DARPA and RITMO performers on the data made available thus far and to answer questions.

The Final Challenge will occur in 2 rounds at Phase 3, Month 36. As in Phases 1 and 2, competitors in Track D and E will submit their algorithms, and DARPA will evaluate them on holdout RITMO data. However, round 2 will occur in person at the same location as the Final Challenge for Tracks A-C. Prizes will be awarded to the top-performing teams regardless of funding source (self or DARPA-funded).

### 1.3.2.2 Secondary triage competition Deliverables

**Deliverable:** Software

**Frequency:** As required, to be specified in Challenge rules

**Format:** Software package (e.g., Docker container)

**Description:** Teams will submit their software (e.g., source code and/or binaries via Docker containers) for the challenge events by associated qualification deadlines and submission deadlines.

**Deliverable:** Progress Report

**Frequency:** Monthly

**Format:** Microsoft PowerPoint

**Description:** Summary of technical accomplishments, planned actions for the next reporting period, graphical representations of work being completed, and relevant financial information

**Deliverable:** Post Challenge Event Report

**Frequency:** 1 month after each event

**Format:** Microsoft Word

**Description:** A technical report on the team’s performance in the event providing an analysis of their performance in the competition.

**Deliverable:** Project Documentation

**Frequency:** As required

**Format:** Competitor-defined formats

**Description:** Relevant documentation developed over the course of the program (e.g., registration materials, qualification packages, briefings, technical papers and presentations, posters, multimedia, graphics, Jupyter notebooks)

**Deliverable:** Final Report

**Frequency:** Prior to contract completion

**Format:** Microsoft Word

**Description:** Detailed description of the project effort, tasks, technical approach, testing and event results, analysis of results, and lessons learned

### 1.3.3 Funding

The program has planned the following funding for Track A and Track D performer teams. This plan is subject to change based on the number of qualified teams and available resources.

Table 5: Funding for DARPA-funded teams.

Track		Phase 1	Phase 2	Phase 3
A	# Teams	Up to 7	Up to 5	Up to 4
	Funding	≤\$750K per team	≤\$750K per team	≤\$750K per team
D	# Teams	Up to 6	Up to 5	Up to 4
	Funding	≤\$500K per team	≤\$500K per team	≤\$500K per team

Track A and Track D funding will be split into a Phase 1 base, with costed options for Phase 2 and Phase 3. Decision to exercise contract options will be based on performance in the challenge events

and DARPA's assessment of progress towards achieving the technical goals of the DARPA Triage Challenge. If a DARPA-funded team fails to place in these Challenges, their funding for follow-on phases may not be exercised, thus ending their Government funding. DARPA, at its discretion, may adjust the number of teams accepted to compete.

## 1.4 INFRASTRUCTURE

### 1.4.1 End user groups

A group of potential end users will be actively involved throughout the course of the DARPA Triage Challenge. This group will contain a mix of civilian and military partners. The end user group will attend various DARPA Triage Challenge events to provide feedback to DARPA and competitors on desired traits in a final product. While feedback from end users may in part inform decision making on continued funding in further phases for DARPA-funded teams, it will have no effect on scoring in the challenge events.

### 1.4.2 IV&V and Training data

The IV&V team will develop training data and challenge scenarios for the three challenge events. Training data in each phase will be aligned with the challenge scenarios for that phase. The IV&V team will provide access and support in interacting with the training data.

*Primary triage training data* – The IV&V team will design and record scenarios using physical simulations of casualties. This training data will be securely stored in the cloud and only downloadable through the DARPA Triage Challenge web portal by challenge participants. At the beginning of each phase, the IV&V team will provide additional training data to competitors. The data provided in a given phase will be a set of sensor recordings of simulated casualties (actors or manikins) taken by UAVs, UGVs, and stationary sensors in settings similar to the end-of-phase challenge event. The initial sensors for training will be multimodal, including EO and IR. In Phases 2 and 3, competitor feedback during workshops and challenge events will affect the number and types of sensors chosen for recording training data. Recordings of casualty simulations at each workshop and challenge event will be provided as additional training data.

*Secondary triage training data* – The training data for Secondary triage will be a subset of the data collected in RITMO, with holdout data reserved for challenge events. This data will be securely stored in the cloud and only accessible through the DARPA Triage Challenge web portal by challenge participants. The data will not be downloadable; competitors will run their training and testing through the portal. The dataset will consist of de-identified data from trauma casualties in multiple populations (see RITMO BAA for more details on potential data types). The first set of data will be released at the beginning of Phase 1, with updates prior to workshops and at the beginning of Phases 2 and 3. At the end of the DARPA Triage Challenge, all data will return to the RITMO performers who provided it.

*Additional data sources* - Competitors may use additional data to train their models, such as data collected on manikins, synthetic data, virtual environments, or pre-existing datasets. DARPA will not fund additional human or animal subject research for the DARPA Triage Challenge.



## 2 Award Information

### 2.1 GENERAL AWARD INFORMATION

Multiple awards are possible. 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.2., “Representations and Certifications”). The Government reserves the right to remove proposers from award consideration should the parties fail to reach an agreement on award terms, conditions, and/or cost/price within a reasonable time, and the proposer fails to timely provide requested additional information. Proposals identified for negotiation may result in a procurement contract, 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. § 4022(f), the Government may award a follow-on production contract or Other Transaction (OT) for any OT awarded under this solicitation 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

## 2.2 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 solicitation, the Government expects that program goals as described herein may be met by proposers intending to perform fundamental research and does not anticipate applying publication restrictions of any kind to individual awards for fundamental research that may result from this solicitation. Notwithstanding this statement of expectation, the Government is not prohibited from considering and selecting research proposals that, while perhaps not qualifying as fundamental research under the foregoing definition, still meet the solicitation criteria for submissions. If proposals are selected for award that offer other than a fundamental research solution, the Government will either work with the proposer to modify the proposed statement of work to bring the research back into line with fundamental research or else the proposer will agree to restrictions in order to receive an award.

University or non-profit research institution performance under this solicitation will include effort categorized as fundamental research. In addition to Government support for free and open scientific exchanges and dissemination of research results in a broad and unrestricted manner, the academic or non-profit research performer or recipient, regardless of tier, acknowledges that such research may have implications that are important to U.S. national interests and must be protected against foreign influence and exploitation. As such, the academic or non-profit research performer or recipient agrees to comply with the following requirements:

- (a) The University or non-profit research institution performer or recipient must establish and maintain an internal process or procedure to address foreign talent programs, conflicts of commitment, conflicts of interest, and research integrity. The academic or non-profit research performer or recipient must also utilize due diligence to identify Foreign Components or participation by Senior/Key Personnel in Foreign Government Talent Recruitment Programs and agree to share such information with the Government upon request.
  - i. The above described information will be provided to the Government as part of the proposal response to the solicitation and will be reviewed and assessed prior to award. Generally, this information will be included in the Research and Related Senior/Key Personnel Profile (Expanded) form (SF-424) required as part the proposer’s submission through Grants.gov.
    1. Instructions regarding how to fill out the SF-424 and its biographical sketch can be found through Grants.gov.

- ii. In accordance with USD(R&E) direction to mitigate undue foreign influence in DoD-funded science and technology, DARPA will assess all Senior/Key Personnel proposed to support DARPA grants and cooperative agreements for potential undue foreign influence risk factors relating to professional and financial activities. This will be done by evaluating information provided via the SF-424, and any accompanying or referenced documents, in order to identify and assess any associations or affiliations the Senior/Key Personnel may have with foreign strategic competitors or countries that have a history of intellectual property theft, research misconduct, or history of targeting U.S. technology for unauthorized transfer. DARPA's evaluation takes into consideration the entirety of the Senior/Key Personnel's SF-424, current and pending support, and biographical sketch, placing the most weight on the Senior/Key Person's professional and financial activities over the last 4 years. The majority of foreign entities lists used to make these determinations are publicly available. The DARPA Countering Foreign Influence Program (CFIP) "Senior/Key Personnel Foreign Influence Risk Rubric" details the various risk ratings and factors. The rubric can be seen at the following link:  
<https://www.darpa.mil/attachments/092021DARPA CFIP Rubric.pdf>
- iii. Examples of lists that DARPA leverages to assess potential undue foreign influence factors include, but are not limited to:
  - 1. Executive Order 13959 "Addressing the Threat From Securities Investments That Finance Communist Chinese Military Companies":  
<https://www.govinfo.gov/content/pkg/FR-2020-11-17/pdf/2020-25459.pdf>
  - 2. The U.S. Department of Education's College Foreign Gift and Contract Report: [College Foreign Gift Reporting \(ed.gov\)](https://www.ed.gov/collegeforeigngiftreport)
  - 3. The U.S. Department of Commerce, Bureau of Industry and Security, List of Parties of Concern: <https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern>
  - 4. Georgetown University's Center for Security and Emerging Technology (CSET) Chinese Talent Program Tracker:  
<https://chinatalenttracker.cset.tech>
  - 5. Director of National Intelligence (DNI) "World Wide Threat Assessment of the US Intelligence Community": [2021 Annual Threat Assessment of the U.S. Intelligence Community \(dni.gov\)](https://www.dni.gov/2021-annual-threat-assessment-of-the-us-intelligence-community)
  - 6. Various Defense Counterintelligence and Security Agency (DCSA) products regarding targeting of US technologies, adversary targeting of academia, and the exploitation of academic experts: <https://www.dcsa.mil/>
- (b) DARPA's analysis and assessment of affiliations and associations of Senior/Key Personnel is compliant with Title VI of the Civil Rights Act of 1964. Information regarding race, color, or national origin is not collected and does not have bearing in DARPA's assessment.
- (c) University or non-profit research institutions with proposals selected for negotiation that have been assessed as having high or very high undue foreign

influence risk, will be given an opportunity during the negotiation process to mitigate the risk. DARPA reserves the right to request any follow-up information needed to assess risk or mitigation strategies.

- i. Upon conclusion of the negotiations, if DARPA determines, despite any proposed mitigation terms (e.g. mitigation plan, alternative research personnel), the participation of any Senior/Key Research Personnel still represents high risk to the program, or proposed mitigation affects the Government's confidence in proposer's capability to successfully complete the research (e.g., less qualified Senior/Key Research Personnel) the Government may determine not to award the proposed effort. Any decision not to award will be predicated upon reasonable disclosure of the pertinent facts and reasonable discussion of any possible alternatives while balancing program award timeline requirements.
- (d) Failure of the academic or non-profit research performer or recipient to reasonably exercise due diligence to discover or ensure that neither it nor any of its Senior/Key Research Personnel involved in the subject award are participating in a Foreign Government Talent Program or have a Foreign Component with an a strategic competitor or country with a history of targeting U.S. technology for unauthorized transfer may result in the Government exercising remedies in accordance with federal law and regulation.
- i. If, at any time, during performance of this research award, the academic or non-profit research performer or recipient should learn that it, its Senior/Key Research Personnel, or applicable team members or subtier performers on this award are or are believed to be participants in a Foreign Government Talent Program or have Foreign Components with a strategic competitor or country with a history of targeting U.S. technology for unauthorized transfer , the performer or recipient will notify the Government Contracting Officer or Agreements Officer within 5 business days.
    1. This disclosure must include specific information as to the personnel involved and the nature of the situation and relationship. The Government will have 30 business days to review this information and conduct any necessary fact-finding or discussion with the performer or recipient.
    2. The Government's timely determination and response to this disclosure may range anywhere from acceptance, to mitigation, to termination of this award at the Government's discretion.
    3. If the University receives no response from the Government to its disclosure within 30 business days, it may presume that the Government has determined the disclosure does not represent a threat.
  - ii. The performer or recipient must flow down this provision to any subtier contracts or agreements involving direct participation in the performance of the research.
- (e) Definitions
- i. Senior/Key Research Personnel

1. This definition would include the Principal Investigator or Program/Project Director and other individuals who contribute to the scientific development or execution of a project in a substantive, measurable way, whether or not they receive salaries or compensation under the award. These include individuals whose absence from the project would be expected to impact the approved scope of the project.
  2. Most often, these individuals will have a doctorate or other professional degrees, although other individuals may be included within this definition on occasion.
- ii. Foreign Associations/Affiliations
1. Association is defined as collaboration, coordination or interrelation, professionally or personally, with a foreign government-connected entity where no direct monetary or non-monetary reward is involved.
  2. Affiliation is defined as collaboration, coordination, or interrelation, professionally or personally, with a foreign government-connected entity where direct monetary or non-monetary reward is involved.
- iii. Foreign Government Talent Recruitment Programs
1. In general, these programs will include any foreign-state-sponsored attempt to acquire U.S. scientific-funded research or technology through foreign government-run or funded recruitment programs that target scientists, engineers, academics, researchers, and entrepreneurs of all nationalities working and educated in the U.S.
  2. Distinguishing features of a Foreign Government Talent Recruitment Program may include:
    - a. Compensation, either monetary or in-kind, provided by the foreign state to the targeted individual in exchange for the individual transferring their knowledge and expertise to the foreign country.
    - b. In-kind compensation may include honorific titles, career advancement opportunities, promised future compensation or other types of remuneration or compensation.
    - c. Recruitment, in this context, refers to the foreign-state-sponsor's active engagement in attracting the targeted individual to join the foreign-sponsored program and transfer their knowledge and expertise to the foreign state. The targeted individual may be employed and located in the U.S. or in the foreign state.
    - d. Contracts for participation in some programs that create conflicts of commitment and/or conflicts of interest for researchers. These contracts include, but are not limited to, requirements to attribute awards, patents, and projects to the foreign institution, even if conducted under U.S. funding, to recruit or train other talent recruitment plan members, circumventing merit-based processes, and to replicate or transfer U.S.-funded work in another country.

- e. Many, but not all, of these programs aim to incentivize the targeted individual to physically relocate to the foreign state. Of particular concern are those programs that allow for continued employment at U.S. research facilities or receipt of U.S. Government research funding while concurrently receiving compensation from the foreign state.
3. Foreign Government Talent Recruitment Programs DO NOT include:
- a. Research agreements between the University and a foreign entity, unless that agreement includes provisions that create situations of concern addressed elsewhere in this section,
  - b. Agreements for the provision of goods or services by commercial vendors, or
  - c. Invitations to attend or present at conferences.
- iv. Conflict of Interest
- 1. A situation in which an individual, or the individual's spouse or dependent children, has a financial interest or financial relationship that could directly and significantly affect the design, conduct, reporting, or funding of research.
- v. Conflict of Commitment
- 1. A situation in which an individual accepts or incurs conflicting obligations between or among multiple employers or other entities.
  - 2. Common conflicts of commitment involve conflicting commitments of time and effort, including obligations to dedicate time in excess of institutional or funding agency policies or commitments. Other types of conflicting obligations, including obligations to improperly share information with, or withhold information from, an employer or funding agency, can also threaten research security and integrity and are an element of a broader concept of conflicts of commitment.
- vi. Foreign Component
- 1. Performance of any significant scientific element or segment of a program or project outside of the U.S., either by the University or by a researcher employed by a foreign organization, whether or not U.S. government funds are expended.
  - 2. Activities that would meet this definition include, but are not limited to:
    - a. Involvement of human subjects or animals;
    - b. Extensive foreign travel by University research program or project staff for the purpose of data collection, surveying, sampling, and similar activities;
    - c. Collaborations with investigators at a foreign site anticipated to result in co-authorship;

- d. Use of facilities or instrumentation at a foreign site;
  - e. Receipt of financial support or resources from a foreign entity; or
  - f. Any activity of the University that may have an impact on U.S. foreign policy through involvement in the affairs or environment of a foreign country.
3. Foreign travel is not considered a Foreign Component.
- vii. Strategic Competitor
- 1. A nation, or nation-state, that engages in diplomatic, economic or technological rivalry with the United States where the fundamental strategic interests of the U.S are under threat.

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.

### **3 Eligibility Information**

#### **3.1 ELIGIBLE APPLICANTS**

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities, Small Businesses, Small Disadvantaged Businesses and Minority Institutions are encouraged to submit proposals and join others in submitting proposals; however, no portion of this announcement will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities.

##### **3.1.1 Federally Funded Research and Development Centers (FFRDCs) and Government Entities**

###### **3.1.1.1 FFRDCs**

FFRDCs are subject to applicable direct competition limitations and cannot propose to this solicitation 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.

### **3.1.1.2 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.

### **3.1.1.3 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. § 4892 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.

### **3.1.2 Non-U.S. Organizations**

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.

## **3.2 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 solicitation. 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 solicitation 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.

### **3.3 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.

## **4 Application and Submission Information**

### **4.1 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 <http://www.darpa.mil>, contact the administrative contact listed herein.

### **4.2 CONTACT AND FORM OF APPLICATION SUBMISSION**

All submissions, including abstracts and proposals, must be written in English with type no smaller than 12-point font. Smaller font may be used for figures, tables, and charts. The page limitation includes all figures, tables, and charts. All pages shall be formatted for printing on 8-1/2 by 11-inch paper. Margins must be 1-inch on all sides. Copies of all documents submitted must be clearly labeled with the DARPA BAA number, proposer organization, and proposal title/proposal short title.

#### **4.2.1 Proposal Abstract Format**

Proposers are strongly encouraged to submit an abstract in advance of a proposal to minimize effort and reduce the potential expense of preparing an out-of-scope proposal. DARPA will respond to abstracts providing feedback and indicating whether, after preliminary review, there is interest within BTO for the proposed work. DARPA will attempt to reply within **20** calendar

days of receipt. Proposals may be submitted irrespective of comments or feedback received in response to the abstract. Proposals are reviewed without regard to feedback given as a result of abstract review. The time and date for submission of proposal abstracts are specified in Part I above.

The abstract is a concise version of the proposal comprising a maximum of **ten (10)** pages, including all figures, tables, and charts. Copies of all documents submitted must be clearly labeled with the DARPA BAA number, proposer organization, and proposal abstract title.

The page limit does NOT include:

- Official transmittal letter (optional);
- Cover sheet;
- Executive summary slide;
- Resumes; and
- Bibliography (optional).

Abstracts must include the following components:

**A. Cover Sheet (does not count towards page limit):** Include the administrative and technical points of contact (name, address, phone, fax, e-mail, lead organization). Also include the BAA number, title of the proposed project, primary subcontractors, estimated cost, duration of the project, and the label “ABSTRACT.”

**B. Goals and Impact:** Clearly describe what is being proposed and what difference it will make (qualitatively and quantitatively), including brief answers to the following questions:

1. What is the proposed work attempting to accomplish or do?
2. How is it done today, and what are the limitations?
3. What is innovative in your approach, and how does it compare to the current state-of-the-art (SOA)?
4. What are the key technical challenges in your approach, and how do you plan to overcome these?
5. Who will care, and what will the impact be if you are successful?
6. How much will it cost, and how long will it take?

**C. Executive Summary Slide:** The slide template is provided as **Attachment 1** to the BAA posted at <http://www.SAM.gov>. Use of this template is required.

**D. Technical Plan:** Outline and address all technical areas and challenges inherent in the approach and possible solutions for overcoming potential problems. This section should provide specific objectives, metrics, and milestones at intermediate stages of the project to demonstrate a plan for accomplishment of the program goals. Propose additional appropriate qualitative and quantitative metrics specific to the approach, as needed. Outline of intermediary milestones should occur at no greater than 6-month increments.

**E. Management and Capabilities:** Provide a brief summary of expertise of the team, including subcontractors and key personnel.

A principal investigator for the project must be identified, as well as a description of the team's organization, including a breakdown by Technical Area (TA). All teams are strongly encouraged to identify a Project Manager/Integrator to serve as the primary point of contact to communicate with the DARPA Program Manager, IV&V partner, and Contracting Officer's Representative, coordinate the effort across co-performer, vendor, and subcontractor teams, organize regular performer meetings or discussions, facilitate data sharing, and ensure timely completion of milestones and deliverables.

Include a description of the team's organization, including roles and responsibilities. Team member descriptions should address the Technical Plan (and should include members with needed regulatory/environmental compliance expertise). Describe the time and percent effort divisions for members participating across multiple tasks / TAs, and delineate individuals to avoid duplication of efforts.

Describe the organizational experience in this area, existing intellectual property required to complete the project, and any specialized facilities to be used as part of the project. List Government-furnished materials or data assumed to be available. Describe any specialized facilities to be used as part of the project, the extent of access to these facilities, and any biological containment, biosafety, and certification requirements.

**F. Cost and Schedule:** Provide a cost estimate for resources over the proposed timeline of the project, broken down by phase and major cost items (e.g., labor, materials, etc.). Include cost estimates for each potential subcontractor (may be a rough order of magnitude).

**G. Curriculum Vitae** (do not count towards page limit): Include CVs of key team members, one of which must be from/for the Principal Investigator.

**H. References** (Optional, does not count towards page limit): If desired, include a brief list of references cited in the abstract with links to relevant papers and reports. The references list should not exceed two (2) pages.

#### 4.2.2 Proposal Format

All full proposals must be in the format given below. Proposals shall consist of two volumes: 1) **Volume I, Technical and Management Proposal**, and 2) **Volume II, Cost Proposal**. All submissions must be written in English with type no smaller than 12-point font. A smaller font may be used for figures, tables, and charts. The page limitation includes all figures, tables, and charts. All pages shall be formatted for printing on 8-1/2 by 11- inch paper. Margins must be 1- inch on all sides. Copies of all documents submitted must be clearly labeled with the DARPA BAA number, proposer organization, and proposal title/proposal short title. Volume I, Technical and Management Proposal, may include an attached bibliography of relevant technical papers or research notes (published and unpublished) which document the technical ideas and approach upon which the proposal is based. Copies of not more than three (3) relevant papers may be included

with the submission. The bibliography and attached papers are not included in the page counts given below. The submission of other supporting materials along with the proposals is strongly discouraged and will not be considered for review. **The maximum page count for Volume I is twenty-five (25) pages. Sections I, II.F, and III are not included in the page count.** Volume I should include the following components:

**NOTE: Non-conforming submissions that follow the instructions herein may be rejected without further review.**

**a. Volume I, Technical and Management Proposal**

Section I. Administrative

**A. Cover Sheet (LABELED “PROPOSAL: VOLUME I”):**

1. BAA number (HR001123S0011);
2. Lead organization submitting proposal (prime contractor);
3. Type of organization, selected from among the following categories: “LARGE BUSINESS,” “SMALL DISADVANTAGED BUSINESS,” “OTHER SMALL BUSINESS,” “HBCU,” “MI,” “OTHER EDUCATIONAL,” OR “OTHER NONPROFIT”;
4. Proposer’s reference number (if any);
5. Other team members (if applicable) and type of business for each;
6. Proposal title;
7. Technical point of contact (Program Manager or Principle Investigator) to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax, e-mail;
8. Administrative point of contact (Contracting Officer or Award Officer) to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax, e-mail;
9. 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;
10. Place(s) of performance, including all subcontractors and consultants;
11. Period of performance;
12. Total funds requested from DARPA, total funds requested per phase and the amount of any cost share (if any);
13. Proposal validity period; AND
14. Date proposal was submitted.

Information on award instruments is available at <http://www.darpa.mil/work-with-us/contract-management>.

**B. Official Transmittal Letter**

**C. Executive Summary Slide:** The slide template is provided as **Attachment 1** to the BAA posted at <http://www.SAM.gov>. Use of this template is required.

## Section II. Detailed Proposal Information

**A. Executive Summary:** Provide a synopsis of the proposed project, including answers to the following questions:

- What is the proposed work attempting to accomplish or do?
- How is it done today, and what are the limitations?
- What is innovative in your approach?
- What are the key technical challenges in your approach, and how do you plan to overcome these?
- Who or what will be affected, and what will be the impact if the work is successful?
- How much will it cost, and how long will it take?

**B. Goals and Impact:** Clearly describe what the team is trying to achieve and the difference it will make (qualitatively and quantitatively) if successful. Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the uniqueness and benefits of this project in the context of the state of the art, alternative approaches, and other projects from the past and present. Describe how the proposed project is revolutionary and how it significantly rises above the current state-of-the-art. Describe the deliverables associated with the proposed project, plans for participating in competition events and any plans to commercialize the technology, transition it to a customer, or further the work.

**C. Technical Plan:** Outline and address technical challenges inherent in the approach and possible solutions for overcoming potential problems. This section should provide appropriate measurable milestones (quantitative if possible) at intermediate stages of the program to demonstrate progress, plan for achieving the milestones, and qualifying for the competition. This must include a simple process flow diagram of their final system concept. The technical plan should demonstrate a deep understanding of the technical challenges and present a credible (even if risky) plan to achieve the program goal. Discuss mitigation of technical risk.

**D. Management Plan:** Provide a summary of expertise of the team, including any subcontractors, and key personnel who will be doing the work. A Principal Investigator (PI) for the project must be identified, along with a description of the team's organization. All teams are strongly encouraged to identify a Project Manager/Integrator to serve as the primary point of contact to communicate with the DARPA Program Manager, IV & V partners, and Contracting Officer's Representative, coordinate the effort across co-performer, vendor, and subcontractor teams, organize regular performer meetings or discussions, facilitate data sharing, and ensure timely completion of milestones and deliverables.

Provide a clear description of the team's organization, including an organization chart that includes, as applicable: the programmatic relationship of team members; the unique capabilities of team members; the task responsibilities of team members, the teaming

strategy among the team members; and key personnel with the amount of effort to be expended by each person during each year. Provide a detailed plan for coordination, including explicit guidelines for interaction among collaborators/subcontractors of the proposed effort. Include risk management approaches. Describe any formal teaming agreements that are required to execute this program.

**E. Capabilities:** Describe organizational experience in relevant subject area(s), existing intellectual property, specialized facilities, and any Government-furnished materials or information. Describe any specialized facilities to be used as part of the project, the extent of access to these facilities, and any biological containment, biosafety, and certification requirements. Discuss any work in closely related research areas and previous accomplishments.

**F. Statement of Work (SOW) NOT INCLUDED IN PAGE COUNT:** The SOW should provide a detailed task breakdown, citing specific tasks for each Technical Area, and their connection to the milestones and program metrics. Each phase of the program should be separately defined. The SOW must not include proprietary information. It is encouraged, though not required, to use the SOW template provided as **Attachment 2**.

For each task/subtask, provide:

- A detailed description of the approach to be taken to accomplish each defined task/subtask.
- Identification of the primary organization responsible for task execution (prime contractor, subcontractor(s), consultant(s), by name).
- A measurable milestone, i.e., a deliverable, demonstration, or other event/activity that marks task completion. Include completion dates for all milestones. Include quantitative metrics.
- A definition of all deliverables (e.g., data, reports, software) to be provided to the Government in support of the proposed tasks/subtasks.
- The SOW must clearly and separately define tasks associated with each phase of the program.

**G. Schedule and Milestones:** Provide a detailed schedule showing tasks (task name, duration, work breakdown structure element as applicable, performing organization), milestones, and the interrelationships among tasks. The task structure must be consistent with that in the SOW. Measurable milestones should be clearly articulated and defined in time relative to the start of the project.

**H. RITMO Association mitigations (if applying for Secondary triage track) NOT INCLUDED IN PAGE COUNT.** Any relevant associations with RITMO performers and measures to firewall RITMO data from the proposer's team.

### Section III. Additional Information

Provide a list of technical references cited in Section II of the proposal that document the technical ideas upon which the proposal is based. Copies of not more than three (3) papers

germane to the technical proposal and important for documenting the feasibility of proposed approach may be included in the submission.

**b. Volume II, Cost Management Proposal**

**Cover Sheet (LABELED “PROPOSAL: VOLUME II”):**

1. BAA Number (HR001123S0011);
2. Lead Organization Submitting proposal;
3. Type of organization, selected among the following categories: “LARGE BUSINESS”, “SMALL DISADVANTAGED BUSINESS”, “OTHER SMALL BUSINESS”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, OR “OTHER NONPROFIT”;
4. Proposer’s reference number (if any);
5. Other team members (if applicable) and type of business for each;
6. Proposal title;
7. Technical point of contact (Program Manager or Principal Investigator) to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available);
8. Administrative point of contact (Contracting Officer or Award Officer) to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), and electronic mail (if available);
9. 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;
10. Place(s) of performance, including all subcontractors and consultants;
11. Period of performance;
12. Total funds requested from DARPA, total funds requested per phase (as defined in Table 1), and the amount of any cost share (if any);
13. Name, address, and telephone number of the proposer’s cognizant Defense Contract Management Agency (DCMA) administration office (*if known*);
14. Name, address, and telephone number of the proposer’s cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*);
15. Date proposal was prepared;
16. Unique Entity Identifier (UEI) (<https://www.gsa.gov/about-us/organization/federal-acquisition-service/office-of-systems-management/integrated-award-environment-iae/iae-systems-information-kit/unique-entity-identifier-update>);
17. Taxpayer ID number (<https://www.irs.gov/Individuals/International-Taxpayers/Taxpayer-Identification-Numbers-TIN>);
18. Commercial and Government Entity (CAGE) code (<https://cage.dla.mil/Home/UsageAgree>);
19. Proposal validity period

**NOTE: Non-conforming submissions that do not follow the instructions herein may be rejected without further review.**

The Government requires 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.**

\*University proposers requesting a grant, cooperative agreement, or Other Transaction for Research do not need to use the MS Excel™ DARPA Standard Cost Proposal Spreadsheet. Instead, a proposed budget and justification may be provided using the SF-424 Research & Related Budget forms provided via <https://www.grants.gov>.

- (1) Total program, per phase (Phase 1 (Base); Phase 2 (Option); and Phase 3 (Option)), and per task cost broken down by major cost items to include:
  - i. **Direct labor** – provide an itemized breakout of all personnel, listed by name or TBD, with labor rate (or salary), labor hours (or percent effort), and labor category. All senior personnel must be identified by name.
  - ii. **Materials and Supplies** – itemized list which includes description of material, quantity, unit price, and total price. If a material factor is used based on historical purchases, provide data to justify the rate.
  - iii. **Equipment** – itemized list which includes description of equipment, unit price, quantity, and total price. Any equipment item with a unit price over \$5,000 must include a vendor quote.
  - iv. **Animal Use Costs** – itemized list of all materials, animal purchases, and per diem costs, associated with proposed animal use; include documentation supporting daily rates.
  - v. **Travel** – provide an itemized list of travel costs to include purpose of trips, departure and arrival destinations, projected airfare, rental car and per GSA approved diem, number of travelers, number of days); provide screenshots from travel website for proposed airfare and rental car, as applicable; provide screenshot or web link for conference registration fee and note if the fee includes hotel cost. Conference attendance must be justified, explain how it is in the best interest of the project. **Plan for three (3) in person events in Year 1, and two (2) in person events in Years 2-3.**
  - vi. **Other Direct Costs (e.g., computer support, clean room fees)** – Should be itemized with costs or estimated costs. Backup documentation and/or a supporting cost breakdown is required to support proposed costs with a unit price over \$5,000. An explanation of any estimating factors, including their



- derivation and application, must be provided. Please include a brief description of the proposers' procurement method to be used.
- vii. **Other Direct Costs** – Consultants: provide executed Consultant Agreement that describes work scope, rate and hours.
  - viii. **Indirect costs** including, as applicable, fringe benefits, overhead, General and Administrative (G&A) expense, and cost of money (see university vs. company-specific requirements below).
  - ix. **Indirect costs specific to a University performer:** (1) **Fringe Benefit Rate** (provide current Department of Health and Human Services (DHHS) or Office of Naval Research (ONR) negotiated rate package; if calculated by other than a rate, provide University documentation identifying fringe costs by position or HR documentation if unique to each person); (2) **F&A Indirect Overhead Rate** (provide current DHHS or ONR negotiated rate package); (3) **Tuition Remission** (provide current University documentation justifying per-student amount); and (4) **Health Insurance/Fee** (provide current University documentation justifying per student amount, if priced separately from fringe benefits with calculations included in the EXCEL cost file).
- Indirect costs specific to a Company performer:** (1) **Fee/Profit** (provide rationale for proposed fee/profit percentage using criteria found in DFARS 215.404-70); and (2) **Fringe Benefit/Labor OH/Material OH/G&A Rates** (provide current Forwarding Pricing Rate Proposal (FPRP) or DCMA/DCAA Forward Pricing Rate Recommendation or Agreement (FPRR or FPRA). If these documents are not available, provide company historical data, preferably two years but a minimum of one, to include both pool and expense costs used to generate the rates).
- (2) A summary of total program costs by Phase I, II, and III and task.
  - (3) An itemization of Subcontracts. All subcontractor cost proposal documentation must be prepared at the same level of detail as that required of the prime. Subcontractor proposals should include Interdivisional Work Transfer Agreements (IWTA) or evidence of similar arrangements (an IWTA is an agreement between multiple divisions of the same organization). The prime proposer is responsible for compiling and providing all subcontractor proposals for the Procuring Contracting Officer (PCO). The proposal must show how subcontractor costs are applied to each phase and task. If consultants are to be used, proposer must provide a consultant agreement or other document that verifies the proposed loaded daily/hourly rate.
  - (4) An itemization of any information technology (IT) purchase (including a letter stating why the proposer cannot provide the requested resources from its own funding), as defined in FAR Part 2.101.
  - (5) A summary of projected funding requirements by month for all phases of the project.
  - (6) A summary of tasks that have animal or human use funding.
  - (7) The source, nature, and amount of any industry cost-sharing. 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.

- (8) 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 Expert/s, etc.).
- (9) Any Forward Pricing Rate Agreement, DHHS rate agreement, other such approved rate information, or such documentation that may assist in expediting negotiations (if available).
- (10) Proposers with a Government acceptable accounting system who are proposing a cost-type contract must submit the DCAA document approving the cost accounting system.

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.)

#### **4.2.2.1 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 which 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 which 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 subawardee should be submitted via e-mail to the address in Section I.

#### **4.2.2.2 Other Transaction (OT) Requests**

All proposers requesting an OT must include a detailed list of milestones for each phase of the program (1, 2, and 3). 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 the 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.

### 4.2.3 Additional Proposal Information

#### 4.2.3.1 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” or “Company 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.

#### 4.2.3.2 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 Program Security Officer (PSO). If a determination is made that the award instrument may result in access to classified information, a Security Classification Guide (SCG) and/or DD Form 254 will be issued by DARPA and attached as part of the award.

### 4.2.4 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”

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://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-171r2.pdf>) 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.

#### 4.2.4.1 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/cas.html>. 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.

**4.2.4.2 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.

**4.2.4.3 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.

**4.2.4.4 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.

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)

For All Non-Procurement Contracts

Proposers responding to this BAA requesting a 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 to use a format similar to that described in the section above. If no restrictions are intended, then the proposer should state “NONE.”

**4.2.4.5 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 solicitation. 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/sys\\_attachment.do?sys\\_id=c08b64ab1b4434109ac5ddb6bc4bcbb8](https://www.fsd.gov/sys_attachment.do?sys_id=c08b64ab1b4434109ac5ddb6bc4bcbb8).

#### 4.2.5 Submission Information

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 HR001123S0011. Submissions may not be sent by fax; 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.

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

Abstracts and Full Proposals sent in response to HR001123S0011 may be submitted via DARPA's BAA Website (<https://baa.darpa.mil>). 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 abstract. Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; it is highly advised that the submission process be started 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. Classified submissions and proposals requesting 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 BAA Website may be reached at [BAAT\\_Support@darpa.mil](mailto:BAAT_Support@darpa.mil), and is typically available during regular business hours (9:00 AM- 5:00 PM EST Monday – Friday).

Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; it is highly advised that the submission process be started as early as possible.

**For Technology Investment Agreements only:**

Proposers requesting Technology Investment Agreements (TIA) awarded under 10 U.S.C. § 4021 must include the completed form indicated below. This requirement only applies only to those who expect to receive a TIA as their ultimate award instrument.

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 form below to collect the necessary information to satisfy these requirements.

The Research and Related Senior/Key Person Profile (Expanded) form, available on the Grants.gov website at [https://apply07.grants.gov/apply/forms/sample/RR\\_KeyPersonExpanded\\_3\\_0-V3.0.pdf](https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_3_0-V3.0.pdf), 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. The form includes 3 parts: the main form administrative information, including the Project Role, Degree Type and Degree Year; the biographical sketch; and the current and pending support. The biographical sketch and current and pending support are to be provided as attachments:

- Biographical Sketch: Mandatory for Project Directors (PD) and Principal Investigators (PI), optional, but desired, for all other Senior/Key Personnel. The biographical sketch should include information pertaining to the researchers:
  - Education and Training.
  - Research and Professional Experience.
  - Collaborations and Affiliations (for conflict of interest).
  - Publications and Synergistic Activities.
- Current and Pending Support: Mandatory for all Senior/Key Personnel including the PD/PI. This attachment should include the following information:
  - 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 solicitation. DARPA reserves the right to request further details from the applicant before making a final determination on funding the effort.

**For Cooperative Agreements only:**

Proposers requesting 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> (DARPA-preferred); 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: In addition to the volumes and corresponding attachments requested elsewhere in this solicitation, proposers must also 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](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.

Form 2: The Research and Related Senior/Key Person Profile (Expanded) form, available on the Grants.gov website at [https://apply07.grants.gov/apply/forms/sample/RR\\_KeyPersonExpanded\\_3\\_0-V3.0.pdf](https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_3_0-V3.0.pdf), 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. The form includes 3 parts: the main form administrative information, including the Project Role, Degree Type and Degree Year; the biographical sketch; and the current and pending support. The biographical sketch and current and pending support are to be provided as attachments:

- Biographical Sketch: Mandatory for Project Directors (PD) and Principal Investigators (PI), optional, but desired, for all other Senior/Key Personnel. The biographical sketch should include information pertaining to the researchers:
  - Education and Training.

- Research and Professional Experience.
- Collaborations and Affiliations (for conflict of interest).
- Publications and Synergistic Activities.
- Current and Pending Support: Mandatory for all Senior/Key Personnel including the PD/PI. This attachment should include the following information:
  - 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 solicitation. DARPA reserves the right to request further details from the applicant before making a final determination on funding the effort.

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](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.*

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>.

**Proposal abstracts will not be accepted if submitted via Grants.gov.**

Hard copy Submissions: Proposers electing to submit cooperative agreement proposals as hard copies must complete the SF 424 R&R form (Application for Federal Assistance), available on the Grants.gov website ([https://apply07.grants.gov/apply/forms/sample/SF424\\_2\\_1-V2.1.pdf](https://apply07.grants.gov/apply/forms/sample/SF424_2_1-V2.1.pdf)).

Failure to comply with the submission procedures may result in the submission not being evaluated. DARPA will acknowledge receipt of complete submissions via e-mail and assign control numbers that should be used in all further correspondence regarding proposals.



### **4.3 FUNDING RESTRICTIONS**

Not applicable.

### **4.4 OTHER SUBMISSION INFORMATION**

DARPA will post a consolidated Frequently Asked Questions (FAQ) document. To access the posting go to <http://www.darpa.mil/work-with-us/opportunities>. A link to the FAQ will appear under the HR001123S0011 summary. Submit your question(s) via e-mail to [TriageChallenge@darpa.mil](mailto:TriageChallenge@darpa.mil).

## **5 Application Review Information**

### **5.1 EVALUATION CRITERIA**

Proposals will be evaluated using the following criteria, listed in descending order of importance: 5.1.1 Overall Scientific and Technical Merit; 5.1.2 Potential Contribution and Relevance to the DARPA Mission; 5.1.3 Cost Realism; and 5.1.4 Realism of Proposed Schedule.

#### **5.1.1 Overall Scientific and Technical Merit**

The proposed technical approach is innovative, feasible, achievable, and complete.

The proposed technical team has the expertise and experience to accomplish the proposed tasks. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final outcome that achieves the goal can be expected as a result of award. The proposal identifies major technical risks, and planned mitigation efforts are clearly defined and feasible.

#### **5.1.2 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.

#### **5.1.3 Cost Realism**

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).

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.

#### **5.1.4 Realism of Proposed Schedule**

The proposed schedule aggressively pursues performance metrics in the shortest timeframe and accurately accounts for that timeframe. The proposed schedule identifies and mitigates any potential schedule risk.

## **5.2 REVIEW OF PROPOSALS**

### **5.2.1.1 Review Process**

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations based on the evaluation criteria listed in [Section 5.1](#). 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 solicitation; 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.

### **5.2.1.2 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 non-disclosure 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.

### **5.2.1.3 Federal Awardee Performance and Integrity Information (FAPIS)**

Per 41 U.S.C. § 2313, as implemented by FAR 9.103 and 2 C.F.R. § 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 FAPIS). 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 FAPIS or other systems, prior to making an award.

### **5.2.1.4 Countering Foreign Influence Program (CFIP)**

DARPA's CFIP is an adaptive risk management security program designed to help protect the critical technology and performer intellectual property associated with DARPA's research projects

by identifying the possible vectors of undue foreign influence. The CFIP team will create risk assessments of all proposed Senior/Key Personnel selected for negotiation of a fundamental research grant or cooperative agreement award. The CFIP risk assessment process will be conducted separately from the DARPA scientific review process and adjudicated prior to final award.

## **6 Award Administration Information**

### **6.1 SUBMISSION STATUS NOTIFICATIONS**

Proposal Abstracts and Full Proposals submitted in response to HR001123S0011 will be evaluated following the submission deadlines listed in Part 1. DARPA will respond as described below. These official notifications will be sent via e-mail to the Technical Point of Contact (POC) and/or Administrative POC identified on the submission coversheet.

#### **6.1.1 Proposal 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.

#### **6.1.2 Full Proposals**

As soon as 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.

### **6.2 ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS**

#### **6.2.1 Meeting and Travel Requirements**

There will be a program kickoff meeting in the Arlington, Virginia, vicinity, and all key participants are required to attend. Performers should also anticipate Annual program-wide Workshops and periodic site visits at the Program Manager's discretion to the Arlington, Virginia vicinity. There will also be annual challenge competitions in location TBD. Proposers shall include within the content of their proposal details and costs of any travel or meetings they deem to be necessary throughout the course of the effort, to include periodic status reviews by the government.

#### **6.2.2 Solicitation Provisions and Award Clauses, Terms and Conditions**

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>.

### **6.2.3 Controlled Unclassified Information (CUI) and Controlled Technical Information (CTI) on Non-DoD Information Systems**

Further information on Controlled Unclassified Information on Non-DoD Information Systems is incorporated herein and can be found at <http://www.darpa.mil/work-with-us/additional-baa>.  
<http://www.darpa.mil/work-with-us/additional-baa>

### **6.2.4 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 supplementary DARPA-specific representations and certifications at the time of proposal submission. See <http://www.darpa.mil/work-with-us/reprs-certs> for further information on required representation and certification depending on your requested award instrument.

A small business joint venture offeror must submit, with its offer, the representation required in paragraph (c) of FAR solicitation provision 52.212-3, Offeror Representations and Certifications-Commercial Products and Commercial Services, and paragraph (c) of FAR solicitation provision 52.219-1, Small Business Program Representations, in accordance with 52.204-8(d) and 52.212-3(b) for the following categories: (A) Small business; (B) Service-disabled veteran-owned small business; (C) Women-owned small business (WOSB) under the WOSB Program; (D) Economically disadvantaged women-owned small business under the WOSB Program; or (E) Historically underutilized business zone small business.

### **6.2.5 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>.

## **6.3 REPORTING**

The number and types of reports will be specified in the award document, but will include as a minimum monthly financial status reports, monthly technical status reports, and quarterly technical status reports. 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 to document progress in accomplishing program metrics. A Final Report that summarizes the project and tasks will be required at the conclusion of the performance period for the award, notwithstanding the fact that the research may be continued under a follow-on vehicle.

## **6.4 ELECTRONIC SYSTEMS**

### **6.4.1 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.

#### 6.4.2 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 (<http://public.era.nih.gov/iedison>).

### 7 Agency Contacts

Administrative, technical or contractual questions should be sent via e-mail to the mailbox listed below.

#### Points of Contact

The BAA Coordinator for this effort may be reached at:

[TriageChallenge@darpa.mil](mailto:TriageChallenge@darpa.mil)

#### DARPA/BTO

ATTN: HR001123S0011

675 North Randolph Street

Arlington, VA 22203-2114

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

### 8 Other Information

#### 8.1 UNIVERSITY FUNDING

In order to ensure that U.S. scientific and engineering students will be able to continue to make strategic technological advances, DARPA is committed to supporting the work and study of Ph.D students and post-doctoral researchers that began work under a DARPA-funded program awarded through an assistance instrument. Stable and predictable federal funding enables these students to continue their scientific and engineering careers.

To that end, should a DARPA funded program (awarded through a grant or cooperative agreement with a university or a Research Other Transaction pursuant to 10 U.S.C. § 4021 where the university is a participant) end before the negotiated period of performance, DARPA will continue to fund, for no more than two semesters (or equivalent), stipend costs to Ph.D students and/or post-doctoral researchers. The stipend amount will be determined at the time of award based on the costs included for such participants in the University's original proposal.

Universities are expected to make reasonable efforts to find alternative research opportunities for these participants before stipend funding is provided in this situation. This additional funding will not be provided in cases where an assistance award option is not exercised or any other scenario in which the University was aware at the time of award that the period of performance

might not continue after a designated programmatic decision (i.e. a down-selection or inclusion of a subsequent programmatic phase).

## **8.2 INFORMATION DAY**

DARPA will host a virtual Information Day in support of the DARPA Triage Challenge on **November 29, 2022**. The purpose is to provide potential proposers with information on the DARPA Triage Challenge, promote additional discussion on this topic, address questions, provide a forum to present their capabilities, and encourage team formation.

Interested proposers are not required to attend to respond to the DARPA Triage Challenge BAA, and relevant information and materials discussed at Information Day will be made available to all potential proposers in the form of a FAQ posted on the DARPA Opportunities Page.

DARPA will not provide cost reimbursement for interested proposers in attendance. An online registration form and various other meeting details can be found at the registration website, <https://events.sa-meetings.com/DTCInformationDay>.

Participants are required to register no later than **November 23, 2022**. This event is not open to the Press. The Information Day event will be open to members of the public who have registered in advance for the event; there will be no onsite registration.

## 9 APPENDIX 1 – Volume II checklist

### Volume II, Cost Proposal Checklist and Sample Templates

**The following checklist and sample templates are provided to assist the proposer in developing a complete and responsive cost volume. Full instructions appear in Section 4.2.2 of HR001123S0011. This worksheet must be included with the coversheet of the Cost Proposal.**

1. Are all items from Section 4.2.2 (Volume II, Cost Proposal) of **HR001123S0011** included on your Cost Proposal cover sheet?  
 YES       NO      Appears on Page(s) [Type text]  
If reply is “No”, please explain:
  
2. Does your Cost Proposal include (1) a summary cost buildup by Phase, (2) a summary cost buildup by Year, and (3) a detailed cost buildup of for each Phase that breaks out each task and shows the cost per month?  
 YES       NO      Appears on Page(s) [Type text]  
If reply is “No”, please explain:
  
3. Does your cost proposal (detailed cost buildup #3 above in item 2) show a breakdown of the major cost items listed below:  
Direct Labor (Labor Categories, Hours, Rates)  
 YES       NO      Appears on Page(s) [Type text]  
  
Indirect Costs/Rates (i.e., overhead charges, fringe benefits, G&A)  
 YES       NO      Appears on Page(s) [Type text]  
  
Materials and/or Equipment  
 YES       NO      Appears on Page(s) [Type text]  
  
Subcontracts/Consultants  
 YES       NO      Appears on Page(s) [Type text]  
  
Other Direct Costs  
 YES       NO      Appears on Page(s) [Type text]  
  
Travel  
 YES       NO      Appears on Page(s) [Type text]  
  
If reply is “No”, please explain:
  
4. Have you provided documentation for proposed costs related to travel, to include purpose of trips, departure and arrival destinations and sample airfare?  
 YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

5. Does your cost proposal include a complete itemized list of all material and equipment items to be purchased (a priced bill-of-materials (BOM))?  
 YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

6. Does your cost proposal include vendor quotes or written engineering estimates (basis of estimate) for all material and equipment with a unit price exceeding \$5000?  
 YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

7. Does your cost proposal include a clear justification for the cost of labor (written labor basis-of-estimate (BOE)) providing rationale for the labor categories and hours proposed for each task?  
 YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

8. Do you have subcontractors/consultants? If YES, continue to question 9. If NO, skip to question 13.  
 YES       NO      **Appears on Page(s)** [Type text]

9. Does your cost proposal include copies of all subcontractor/consultant technical (to include Statement of Work) and cost proposals?  
 YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

10. Do all subcontract proposals include the required summary buildup, detailed cost buildup, and supporting documentation (SOW, Bill-of-Materials, Basis-of-Estimate, Vendor Quotes, etc.)?  
 YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

11. Does your cost proposal include copies of consultant agreements, if available?  
 YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

12. If requesting a FAR-based contract, does your cost proposal include a tech/cost analysis for all proposed subcontractors?  
 YES       NO      **Appears on Page(s)** [Type text]



If reply is “No”, please explain:

13. Have all team members (prime and subcontractors) who are considered a Federally Funded Research & Development Center (FFRDC), included documentation that clearly demonstrates work is not otherwise available from the private sector AND provided a letter on letterhead from the sponsoring organization citing the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and compliance with the associated FFRDC sponsor agreement and terms and conditions.
- YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

14. Does your proposal include a response regarding Organizational Conflicts of Interest?
- YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

15. Does your proposal include a completed Data Rights Assertions table/certification?
- YES       NO      **Appears on Page(s)** [Type text]

If reply is “No”, please explain:

The purpose of Amendment 1 to HR001123S0011, the DARPA Triage Challenge Broad Agency Announcement, is to extend the full proposal deadline and remove restrictions on Human Subjects Research (HSR). Changes **bolded/highlighted/underlined** below.

Part I Overview Information is updated as follows:

- Full Proposal Due Date and Time: **February 27 2023, 4:00 PM ET**
- BAA Closing Date: **February 27, 2023**

Section 1.1.3.1 Triage Signatures is updated as follows:

The notional DARPA Triage Challenge primary triage setting is the first few minutes of an MCI, with automated capture and processing of data from stand-off sensors to support medical responders in evaluating an overwhelming number of casualties. DARPA expects to provide the training data and test data necessary for the workshops and competition events, though competitors may use or develop their own training data (see 1.4.2). **Human subjects research (HSR) may be proposed (see 4.2.3.3).** Sensor-algorithm systems should assess aspects of victim status that medical personnel would evaluate in this initial, rapid stage of triage, such as ability to move, severe hemorrhage, respiratory distress, and alertness. Examples of stand-off strategies could include computer vision, motion tracking, remote photoplethysmography, lidar assessment of respiratory or cardiac activity, and speech recognition, among other potential strategies. Algorithms should be trained to integrate data from multiple stand-off sensor streams and generate a real-time assessment of victim status, most importantly the need for immediate LSIs that medical personnel are trained and equipped to provide in military and civilian pre-hospital settings, such as external hemorrhage control and airway interventions.

Section 1.2.1 **Primary triage competitions**, *Real World (Tracks A and B)* is updated as follows:

Challenge events for Real-World competitors will be physical simulations of casualty scenarios. Although the setting and complexity of challenge events will vary over the course of the DARPA Triage Challenge, the following features are expected to be maintained across events. Each competitor will have access to the same scenario, and no two (2) teams will operate in the same location simultaneously. Competitors will have only general information on the setting beforehand—for example, that it is a battlefield scenario, or a collapsed building following an earthquake. There will be actors and manikins exhibiting varying injuries and severity of injury (subject to the limitations of what can be simulated).

Competitors will use their stand-off sensors, robotic mobility platforms (e.g., UAVs, UGVs), and algorithms to autonomously process sensor data and provide real-time casualty identification and injury assessment. No part of a competitor's system may touch a casualty or manipulate the scene (e.g., clear rubble). Each scenario will have a time limit, with no scenario expected to have a duration greater than one hour. Scoring will be based on a combination of speed and accuracy measures as described in Section 1.2.1.1.

At the beginning of each phase, DARPA will provide additional training data on the participant portal based on multimodal recordings of physical simulations of casualty scenarios similar to the

end-of-phase challenge event. To assist Primary Triage Real-World competitors in developing their strategies, DARPA will host workshops at month 8 of Phase 1 and month 4 of Phases 2 and 3. These workshops will provide an opportunity for Real-World competitors to collect data from physical simulations of scenes similar to end-of-phase events. Real-world competitors should plan for 4 or 5 days of travel to each workshop and challenge event, each to be held at various locations in the continental United States. DARPA expects to provide the training data and test data necessary for the workshops and competition events, but competitors may use or develop their own training data (see Section 1.4.2; **DARPA will not fund competitors to conduct animal research**). **Research plans to collect data from human subjects must be approved by local Institutional Review Boards (IRBs) and DoD Human Research Protections Office (HRPO) (see 4.2.3.3).**

Section 1.2.2 **Secondary triage competition** is updated as follows:

The objective of the Secondary triage competition is to identify physiological signatures of injury derived from data captured by non-invasive sensors (contact-based or stand-off) to enable anticipatory decisions and prioritization for medical evacuation and care. Performers will develop algorithms that detect signatures in these data streams to provide decision support appropriate for austere and complex pre-hospital settings. Of particular interest are early signatures indicating a need for LSIs against conditions that medics are trained and equipped to treat during secondary triage, such as hemorrhage and airway injuries.

The Secondary triage competition is virtual only, and will use DARPA provided de-identified, multi-modal physiological data from trauma patients in diverse settings and cohorts provided by the DARPA Research Infrastructure for Trauma with Medical Observations (RITMO) program. DARPA will provide access to a subset of these data for algorithm training, and evaluate competitor algorithms on holdout test data in end-of-phase challenge events. DARPA expects to provide the training data and test data necessary for Secondary triage competition workshops and competition events, but competitors may use or develop their own training data (see Section 1.4.2; **DARPA will not fund competitors to conduct animal research**). **DARPA expects that any HSR conducted for tracks D and E will be restricted to use of pre-existing datasets.** Scoring may include metrics that combine speed (time to make a prediction) and accuracy measures (Section 1.2.2.1). Secondary triage competitors may be DARPA-funded or self-funded. Challenge events will become progressively more complex and realistic from Phases 1 to 3, as described in Section 1.2.2.2.

### Section 1.3.2 **Secondary Triage: Predictive Signature Development**

Proposers must define the analytical approaches they will use to generate real-time predictions of LSIs based on multimodal non-invasive (contact-based or stand-off) physiological monitoring data. Proposers should refer to the RITMO BAA ([HR001122S0043](#)) for DARPA's solicitation of proposals to plan their approach, as training data will be produced by RITMO performers.

Specifications on the DARPA-provided data for training and challenge events will be announced by the DARPA Triage Challenge Kickoff. In short, DARPA expects to provide DARPA Triage Challenge Secondary triage competitors access to de-identified, large-volume, multimodal sensor, intervention, and medical outcome data obtained from trauma patients during the early post-injury period from multiple trauma settings. Additional patient information, such as demographic data and injury mechanism and pattern, may be available as well. DARPA will provide access to an initial dataset at DARPA Triage Challenge kickoff. At the end of Phase 1 and during Phase 2, we anticipate additional releases of datasets collected by RITMO performers that will include additional sensor data that could enhance development of predictive signatures. DARPA expects to provide the training data and test data necessary for Secondary triage competition workshops and competition events, but competitors may use or develop their own training data (see [Section 1.4.2](#); **DARPA will not fund competitors to conduct animal research**).

Section 4.2.3.3 **Humans Subjects Research** is added:

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