



**Program Solicitation**

**DARPA Strategic Technology Office (STO)**

**Trenton**

**DARPA-PS-24-21**

**September 24, 2024**

## PROGRAM SOLICITATION OVERVIEW INFORMATION

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Strategic Technology Office (STO)
- **Funding Opportunity Title** – Trenton
- **Announcement Type** – Initial Announcement
- **Funding Opportunity Number** – DARPA-PS-24-21
- **Dates**
  - Posting Date: September 24, 2024
  - Proposer's Day: October 10, 2024
  - Questions Due Date: October 16, 2024, by 5:00 PM Eastern Time (ET)
  - Abstracts Due Date and Time: November 5, 2024, by 5:00 PM (ET)
  - Oral Presentations Due Date and Time: By government request, estimated 4 weeks after abstract submission
- The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative approaches to address challenges in the following technical areas: Materials Science, Chemistry, Oceanography, 3D Printing, Robotics, and Engineering.
- **Multiple awards are anticipated.**
  - The government does not anticipate awards being designated as Fundamental Research.
- **Types of instruments that may be awarded** – Other Transaction for Prototype agreements
- **Agency Contact**

Please send questions, abstracts, and oral presentations to the Solicitation Coordinator for this effort at:

[DARPA-PS-24-21@darpa.mil](mailto:DARPA-PS-24-21@darpa.mil)

DARPA/STO  
ATTN: DARPA-PS-24-21  
675 North Randolph Street  
Arlington, VA 22203-2114

Attachment A: Other Transaction (OT) Agreement for Prototype  
Attachment B: Cost Spreadsheet

**PROGRAM SOLICITATION**  
**Defense Advanced Research Projects Agency (DARPA)**  
**Trenton**

**1. Program Information**

**1.1. Background**

This Program Solicitation (PS) calls specifically for abstracts, which will be reviewed by the government. Abstracts call for a rough order of magnitude (ROM) for Phase 1A (base) and Phase 1B (option), with a not-to-exceed amount of \$1,400,000 for both Phases. If abstracts are selected, the proposer will be asked to provide an oral presentation that includes attachments A and B delivered to the proposal. Oral presentations and attachments will be reviewed by the government and, if selected, may result in a Phase 1A base award and potential for a Phase 1B option award of an Other Transaction Agreement for Prototype (OT-P).

This PS encourages solutions to Phase 1A (base) and Phase 1B (option) from all responsible sources capable of satisfying the government's needs, including large and small businesses, *nontraditional defense contractors* as defined in 10 U.S.C. § 3014, and *research institutions* as defined in 15 U.S.C. § 638.

**1.2. Program Description/Scope**

**Overall Trenton Program Scope**

The Trenton program seeks to enable underwater three-dimensional concrete printing (3DCP) through the development, refinement, and optimization of printable formulations and fabrication hardware. Trenton's overall goal is to demonstrate that underwater 3DCP is possible. Trenton's objectives include the development of methodologies and chemistries to support the *in-situ* manufacturing of concrete structures underwater in support of various Department of Defense (DOD) use cases, including coastal infrastructure reinforcement and bridge repair.

The Trenton program will require the development and optimization of printing formulations and fabrication methods. The formulation includes all aspects related to the development and optimization of underwater 3DCP material chemistries. Performers are expected to leverage and refine existing formulations to the maximum extent possible and must be mindful of avoiding potentially toxic materials while developing formulations. Fabrication for Trenton will include aspects of hardware development that enable 3DCP from a land-based system into water at the bench scale. Performers are expected to leverage and adapt existing land-based 3DCP for printing underwater.

**Focus Areas - Formulations and Fabrications**

Both formulation and fabrication must be finely interwoven (e.g., must consider material availability, density control, extrudability, shape retention, print resolution, print open time, and buildability) to successfully achieve underwater 3DCP. Testing formulations and fabrication efforts will require cyclic refinement. Thus, each Performer team is expected to have access to a bench-scale 3D printer that will enable them to print their developed formulations in a tank at laboratory scale by Month 1. Existing commercial hardware is expected to be adapted for this purpose. No capital equipment costs will be included in this program cost. The print hardware and controls can

remain above the surface; however, the print nozzle must be completely submerged.

### **Mid-phase Demonstrations and End-of-phase IV&V Evaluations**

Each Performer team will adapt existing 3D print hardware to print their formulations at laboratory scale in laboratory tanks. Their primary goal will be to demonstrate the ability to print small (<1 m<sup>3</sup>) structures underwater. Additional demonstration criteria will include pumpability, extrudability, shape retention, print open time, and buildability, as well as demonstrated capability to work with more than one sediment type.

Performers will conduct a mid-phase demonstration at the beginning of Month 6 at the performer's facility. During the mid-phase demonstrations, the performers will demonstrate that their formulation and hardware are capable of 3DCP at a depth >30 cm and achieve compressive strength >15 megapascal (MPa) and tensile strength >1.5 MPa after 7 days. This will include testing of 3DCP samples. Performance at mid-phase demonstrations will inform down selection of performers to continue for Phase 1B (option).

The Independent Verification and Validation (IV&V) teams will conduct end-of-phase IV&V evaluations in Month 12. During the end-of-phase IV&V evaluations, Performer teams will bring their formulations to the IV&V team site to 3D print on the IV&V team hardware. The Performer-provided formulation must be compatible with seawater and incorporate seafloor sediment (Government Furnished Material (GFM)) in addition to meeting the end-of-phase metrics.

### **1.3. Acquisition Strategy**

The government's aim is to lower the administrative burden of entry, reduce program risk, foster competition, and have Performer teams begin to work faster. To facilitate this objective, the government will use the following acquisition process for Trenton:

1. Abstracts: Through this solicitation, the government requests proposers to submit abstracts (see Section 3.2). The government will review all submitted abstracts for technical comprehension and ability (see Section 3.3). Selected proposers will be asked to provide an oral presentation (see Section 3.4) to the government.
2. Oral Presentations: Upon the government's request, proposers will have the opportunity to present their proposal for Phase 1A (base) and Phase 1B (option) to the DARPA program team. The government will evaluate all oral presentations (see Section 3.5) and anticipate that selected Performers will be given an OT-P award with a 12-month total potential period of performance to demonstrate successful underwater 3DCP in the laboratory.
3. Phase 1A (6 months) base and Phase 1B option (6 months) will be negotiated using an OT-P mechanism for award with milestone payments, as described in Tables 1 and 2. The Performers will develop, refine, and characterize underwater printable concrete formulations that incorporate GFM in situ seafloor materials. The government anticipates a down-select after the Phase 1A mid-phase demonstrations. The option will be exercised if the performer is selected for Phase 1B.

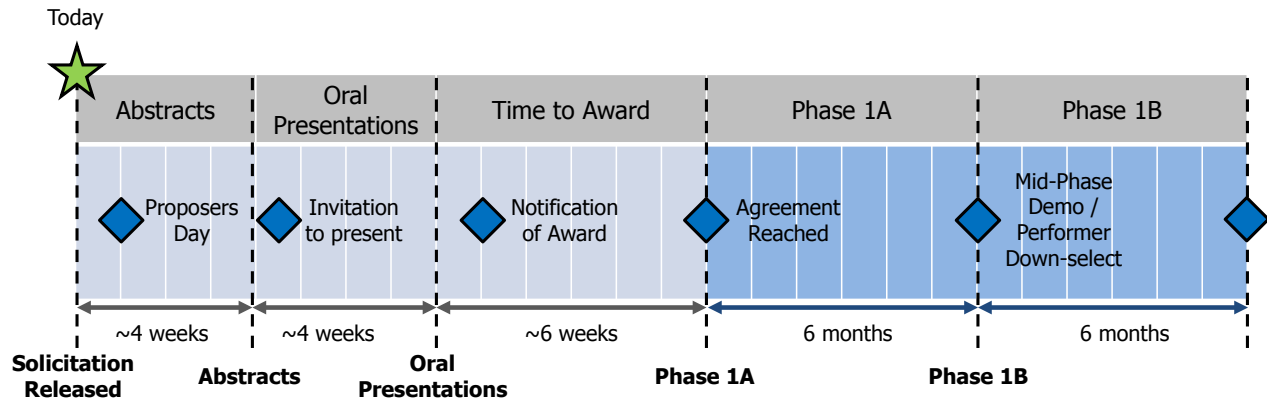


Figure 1 - Acquisition Strategy Timeline

The process and requirements for abstract and Oral submissions are detailed in Section 2.1 of this PS.

### 1.4. Program Structure

Trenton will be executed over a total of 12 months. Phase 1A base (6 months) base will be focused on initial formulation development and 3DCP hardware adaptation, and Phase 1B option (6 months) option will be focused on refining formulation and hardware. The government anticipates a down select at the conclusion of Phase 1A. There will be technical exchanges between the Performers and the IV&V team. The government will lead these exchanges to ensure efficient collaboration. Nondisclosure agreements (NDAs) may be required to facilitate this interaction.

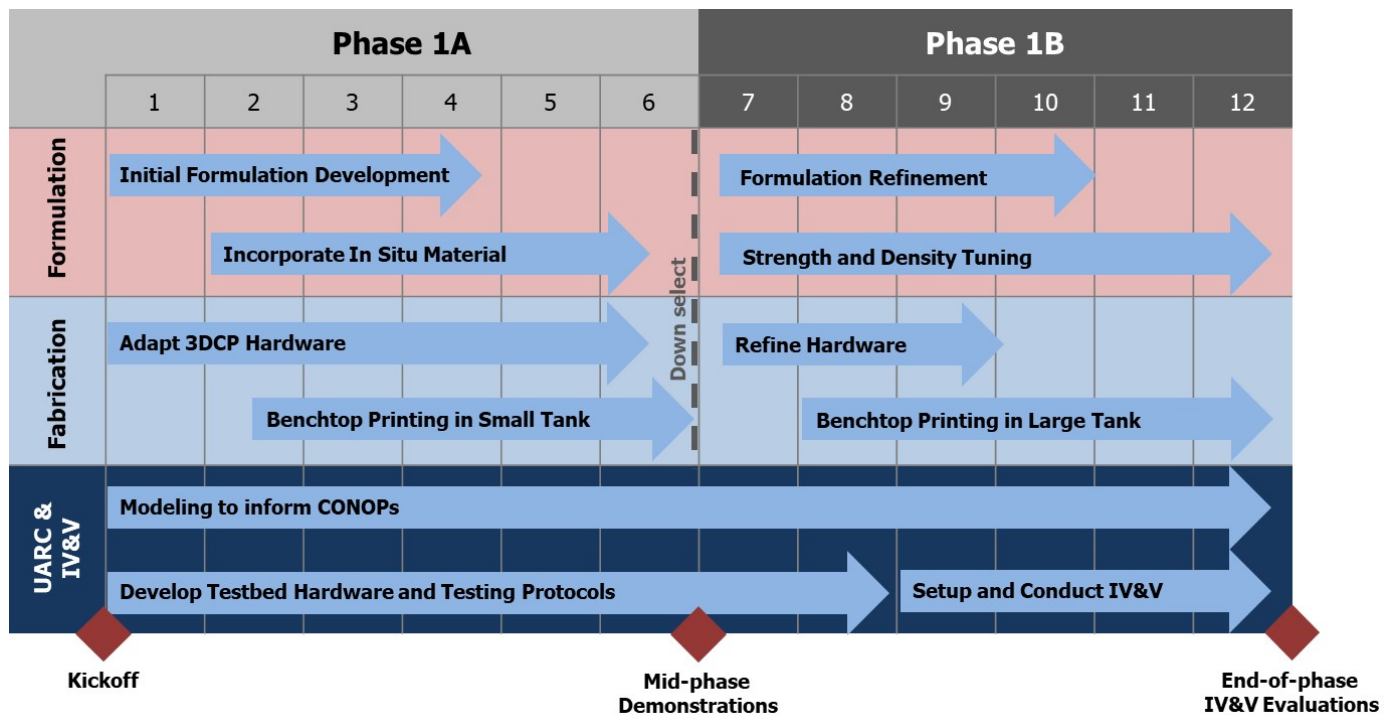


Figure 2 - Trenton Phases

**Phase 1A – Base Period: Initial Formulation Development and Hardware Refinement (6 months)**

In Phase 1A, Performers will develop and refine their formulations and 3DCP hardware, as described in Table 1. A heading check review will be held at Month 2. Mid-phase demonstrations, led by the performers, will be conducted at the beginning of Month 6. Additional specifics for the mid-phase demonstration can be found in Section 1.2.

*Table 1: Phase 1A (base) Schedule of Milestones and Payments*

<b>Milestone</b>	<b>Description</b>	<b>Completion Criteria</b>	<b>Due on or before</b>	<b>Payout Schedule</b>
1	Program Kickoff	Meeting attendance and acceptance by the government of presentation material	1 month AAA	**
2	Monthly Technical and Financial Status Reports	Slide deck summarizing technical approach and progress regarding overall goals, risks, risk mitigations, schedule, and budget review.	Monthly	
3	Heading Check Review	Provide a slide deck that summarizes the technical approach supported by modeling results, technical challenges, risks, risk mitigations, planned laboratory tests, any 3DCP component test results, and a schedule that is specifically focused on the formulations and 3DCP hardware design, along with a complete list of formulation compounds and their associated SDS	2 months AAA	**
4	Preliminary Print and Metrics	Slide deck summarizing the capability of printing, per requirements set forth in Section 1.2.	3 months AAA	
5	Mid-phase Demonstration	Performer teams will host a tour of their facility and conduct live 3DCP demonstrations. Final test reports and mid-phase test results are due at end of Phase 1A.	Beginning of 6 months AAA	**

AAA: After Agreement Award

<sup>1</sup> Review materials due 48 hours in advance of review; final version due 48 hours after review

**Phase 1B Option Period: Refinement of Formulations and 3DCP Hardware (6 months)**

In Phase 1B, Performers will refine their formulations and 3DCP hardware as described in Table 2. Performers will work with the IV&V team at their location to integrate formulations with the IV&V

3D printing hardware for up to four (4) trips. Performers can expect to travel to central Pennsylvania with 1-2 representatives for up to five (5) days for each trip. A Critical Design Review (CDR) will be held in Month 9. End-of-phase IV&V evaluations will be conducted in Month 12 in Key West, FL. The duration of Phase 1B will be 6 months.

*Table 2: Phase1B (option) Schedule of Milestones and Payments*

<b>Milestone</b>	<b>Description</b>	<b>Completion Criteria</b>	<b>Due on or before</b>	<b>Payout Schedule</b>
7	Phase 1B Kickoff	Meeting attendance and acceptance by the government of presentation material	7 months AAA	**
8	Monthly Technical and Financial Status Reports	Slide deck summarizing technical approach and progress regarding overall goals, risks, risk mitigations, schedule, and budget review.	Monthly	
9	CDR	Provide a slide deck detailing formulation and hardware refinements, planned laboratory tests, and future 3DCP hardware refinements focused on scale-up of print component, technical challenges, risks, risk mitigations, and participate in the virtual event.	9 months AAA	**
10	End-of-phase IV&V Evaluations	Bring formulations to the IV&V team site for use in IV&V team hardware, participate in the IV&V evaluations, provide test articles for IV&V testing, and provide a final report. Performers can expect to send 2 representatives for 3 days to Key West for evaluations.	12 months AAA	**

AAA: After Agreement Award

<sup>1</sup>Review materials due 48 hours in advance of review; final version due 48 hours after review

### 1.5. Program Goals/Metrics

The metrics are listed in Table 3.

Table 3: Trenton Metrics

Challenge	Mid-phase Metrics (Phase 1A)	End-of-phase Metrics (Phase 1B)
<b>Use <i>in situ</i> Materials</b>	Demonstrate capability to use seawater as a water source.	
	Use 90% seafloor materials or 10% binder with foaming formulations with seawater.	
	Demonstrate capability to use two (2) (sand and 1 other) sediment types as aggregates GFM)	Demonstrate capability to use at least two (2) additional sediment types as aggregates (GFM)
<b>Print with Precision</b>	Print a cube	Print an arch - 1 m span; rise 0.5 m at a depth of 3 m
	7-day compressive strength >15 MPa; Tensile strength >1.5 MPa	28-day compressive strength > 25 MPa; Tensile strength >2.5 MPa
	Print in place on a hard surface	Print in-place onto soft sediment

**Proposer Walk-Through:** Proposers should describe their plan for meeting the above program metrics and describe their most difficult technical challenges. At a minimum, the top three (3) formulation and fabrication technical challenges will be discussed and explained.

## 2. PS Authority

This PS may result in the award of an OT-P agreement that can include not only commercially available technologies fueled by commercial or strategic investment but also concept demonstrations, pilots, and agile development activities that can incrementally improve commercial technologies, existing government-owned capabilities, and/or concepts for broad defense and/or public application(s). The government reserves the right to award an OT-P agreement under 10 U.S.C. § 4022 or make no award at all. In all cases, the Government Agreements Officer shall have sole discretion to negotiate all agreement terms and conditions with selected proposers. The OT-P agreement will not require cost sharing unless the proposer is a traditional defense contractor who is not working with a nontraditional defense contractor participating in the program to a significant extent.

### 2.1. PS Procedure

In response to this solicitation, proposers are asked to submit a 5-page abstract as described in Section 3.2. This process allows DARPA to ascertain (1) whether the proposers understand the key challenges of the Trenton program and (2) whether they can execute a proposed concept. Specific



evaluation criteria used to make the assessment can be found in Section 3.3. If DARPA finds that both conditions are met, it will request the proposer participate in an oral presentation to DARPA, as described in Section 3.4, where the proposed technical solution will be evaluated. Specific evaluation criteria used to make the assessment can be found in Section 3.5. After the oral presentations, DARPA will decide which proposers are considered selectable against the criteria and may be awarded an OT-P agreement for the Trenton program. The government will not pay proposers responding to this PS for the costs associated with abstract submissions or oral presentations.

Abstracts (result, if successful: an invitation to participate in oral presentations)

Abstracts shall be submitted as specified in Section 3 of this PS. The government will evaluate abstracts against the criteria stated in this PS.

It is important to note that proposers must submit an abstract in response to this solicitation to be considered for participation in the Trenton program. Performers who do not participate in the abstract will not be eligible or invited to provide oral presentations, nor will they be included in any further progression of Phase 1B of the program.

Oral Presentations with Proposal (result if successful: Negotiation of Phase 1 award)

Proposers responding to this PS may be invited to explain their proposed approach and solution further via an oral presentation. Oral presentations will take place approximately four (4) weeks after notification from the government that an oral presentation is requested. Additional instructions (including content due date and presentation date/time) will be provided in the official invitation to participate in oral presentations.

Awards

DARPA will review oral presentations to determine which proposed solutions sufficiently meet the evaluation criteria stated in Section 3.5. Upon favorable review and subject to the availability of funds, the government may award an OT-P agreement under 10 U.S.C. § 4022 with fixed milestones for Phase 1 selectees.

**3. GUIDELINES FOR ABSTRACTS, ORAL PRESENTATIONS, AND PROPOSALS**

**3.1. General Guidelines**

- a. Do not include elaborate brochures or marketing materials; only include information relevant to the submission requirements or evaluation criteria.
- b. Use of a diagram(s) or figure(s) to depict the essence of the proposed solution is permitted.
- c. All abstracts, oral presentations, and proposals shall be unclassified.
- d. 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.

- e. Files containing Controlled Unclassified Information (CUI) must be encrypted when sending over the Internet.
- f. Submissions sent through other mediums, channels, or after the prescribed PS deadline will not be considered, reviewed, or evaluated.
- g. Proposers providing abstracts that are not invited to an oral presentation will be notified in writing as soon as practicable.

### 3.2. Abstract Content

- a. Abstracts should not exceed five (5) single-sided 8.5" by 11" written pages using 12-point Times New Roman font with 1" margins all around.
- b. Abstracts must include the following:

1. **Title page:** Proposer Name, Title, Date, Point of Contact Name, Email Address, Phone, Address, and CAGE Code. (The Title Page does not count against page limits).

- 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, 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. Include this statement on the title page; it will NOT count as part of the five (5) written pages limit. For Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers, and Government entities interested in participating in the Trenton program or proposing to this PS should first contact the Agency. Point of Contact (POC) listed in the Overview section prior to the proposal due date to discuss eligibility.
- The proposer shall include a statement that identifies and substantiates, in narrative, which of the following condition(s) are met to permit the use of OTs for Prototypes in accordance with 10 U.S.C. § 4022 (d)(1). Include this statement on the title page; it will NOT count as part of the written page limit.
  - There is at least one nontraditional defense contractor or nonprofit research institution participating to a significant extent in the prototype project; or
  - All significant participants in the transaction other than the federal government are small businesses (15 U.S.C. 638) or, nontraditional defense contractors; or
  - At least one-third of the total cost of the prototype project is to be paid out of funds provided by sources other than the federal government.

2. **ROM:** Provide a ROM for the total cost of Phase 1 of the proposed solution, with Phase 1A (base) and Phase 1B (option) priced separately. This cost can be given as a range. The ROM will not count against the page limit but should not be more than  $\frac{1}{4}$ - $\frac{1}{2}$  page.
3. **Technical Summary:** Provide a summary of Trenton's technical goals. This summary shall be stated in the proposer's own words without any "copy and paste" of this solicitation. The goal is for the proposer to demonstrate a clear understanding of Trenton's purpose and goals. The summary shall be no more than 1 page and is included in the five (5) written pages limit.
4. **Technical Challenges:** Identify specific technical challenges faced in Trenton. The focus areas are formulation and fabrication. The proposer should include, at minimum, the top three (3) primary risks in successfully executing the Trenton program. The summary shall be no more than 1 page and is included in the five (5) written pages limit.
5. **Technical Ability:** Detail the proposer's team and organization and explain the ability to be successful at achieving the goals if selected. The proposer may include experience, organizational capabilities, team members qualifications, or anything else that demonstrates competence in designing and executing the Trenton effort. The proposer team should include someone with experience in each technical area. The summary shall be no more than 1 page and is included in the five (5) written pages limit.
6. **Technical Approach:** Provide an explanation of the proposer's technical approach for the Trenton program. This should include a schedule and discussion on how the proposer's solutions can scale for real-world applications. The summary shall be the remainder of the five (5) written page limit.

### 3.3. Abstracts – Process and Basis of Evaluation

Abstract evaluation criteria are listed in order of importance. Individual abstracts will be evaluated against the evaluation criteria described below:

- a. **Technical Comprehension:** The proposed technical understanding is accurate, and key technical challenges and risks are identified.
- b. **Technical Ability:** The proposers demonstrate an ability if selected, to achieve the goals of the Trenton program.

Abstracts will be evaluated by DARPA using the evaluation criteria listed above. As stated above, proposers are required to submit an abstract for evaluation by DARPA to minimize effort and reduce the potential expense of preparing an unsuccessful proposal. DARPA will respond to the 5-page abstract with a statement of selection that DARPA is interested in seeing an approximately 45-minute oral presentation with a 30-minute question and answer period. If DARPA is not interested in an oral presentation, it will state this in an email to the proposer. Upon review of abstracts, the government may elect to invite all, some, or none of the proposers to oral presentations. *Only abstract proposers invited by DARPA to participate in oral presentations are eligible to provide one.*

### 3.4. Oral Presentations Content

If DARPA expresses interest in an oral presentation, the proposer will be asked to provide a presentation (maximum 30 slides) and complete Attachments A and B to provide further details on the proposed solution. Specific instructions (including content submission guidelines) will be provided in the invitation to participate. If selected, proposers can expect to be asked to provide the following information (proposers can address them in any order they choose).

- a. Company introduction/overview: Provide information regarding the company and key personnel dedicated to the program and how their past performance and qualifications will contribute to the technical approach. Identify and explain efforts of similar scope and complexity. Describe current materials characterization capabilities.
- b. Technical Approach: Provide a technical approach to accomplish the objectives and scope laid out in this solicitation. This should include at least the following elements:
  1. Proposer's capabilities specific to meeting the objectives of the Trenton program
  2. Formulation development, characterization, and optimization
  3. Fabrication development plan
  4. Formulation and Fabrication paths towards scale-up
- c. Technical Challenges: Present a minimum of three (3) identified risks/challenges for accomplishing the Trenton program objectives and potential mitigation plans.
- d. Budget Estimation: Provide an overview of the Phase 1A (base) and Phase 1B (option) costs and any large equipment purchases.
- e. Teaming/subcontractors: Identify any teammates or subcontractors expected to comprise the team. Identify their roles, any key personnel, and how their past performance and qualifications will contribute to the technical approach.
- f. Data Rights: Identify the proposed intellectual property rights to be given to the government under this agreement for the components of the proposed solution. For Intellectual Property (IP) developed prior to the start of the agreement that will be utilized during program activities, clearly identify the IP and the anticipated level of IP right of use that will be provided to the government. IP developed under an awarded Trenton OT-P agreement is anticipated to be subject to unlimited rights.
- g. Attachment A Model OT for Prototype Agreement: Proposers must complete and submit the Model Other Transaction for Prototype (OT-P) agreement provided as part of the Oral Proposal presentation package, but does not count toward the slide/page count for oral presentations. Please note the appendices for OT Certifications, Intellectual Property Assertions, and Nontraditional Attestation are required as part of the Model OT submission. DARPA has provided the model OT to expedite the negotiation and award process. The model OT is representative of the terms and conditions that DARPA intends to award. Proposers may suggest edits to the model OT for DARPA's consideration and provide a copy of the model OT with tracked changes as part of their proposal package. DARPA may not accept the suggested edits. The government reserves the right to remove a proposal from award consideration should the parties fail to reach an agreement on OT award terms and conditions. If edits to the model OT are not provided as part of the proposal package, DARPA

assumes that the proposer has reviewed and accepted the award terms and conditions to which they may have to adhere and the sample OT agreement provided as an attachment, indicating agreement (in principle) with the listed terms and conditions applicable to the specific award instrument. DARPA explicitly reserves the right to terminate awards if negotiations are not completed in a timely manner.

- h. Attachment B DARPA Standard Cost Proposal Spreadsheet: Detailed budget information for Phase 1A (base) and Phase 1B (option) should be submitted as a separate cost spreadsheet and does not count toward the slide/page count for oral presentations. The cost spreadsheet shall include all proposed material purchases with supporting documentation such as recent purchase orders, commercial catalogs, etc.
- i. Value Assessment Questions for Proposers: Offerors are encouraged, but not required to provide answers to some, all, or none of the following questions as part of the oral presentation package (Please note these will not need to be presented during the oral proposal presentation and will be reviewed whether presented or not. Further, the answers to the questions are not subject to any oral presentation Evaluation Criteria and do not count toward the slide/page count for oral presentations). The questions to be answered are as follows:
  - 1. Please provide your understanding of current technology in this space and how it has informed or influenced your proposed technical solution.
  - 2. How does your proposed solution deliver increased capability beyond what is possible today?
  - 3. How would your proposed solution, if successful, enable federal entities to do what they cannot already do, considering these technologies both with and without added reinforcement?
  - 4. How much time and money could the DOD / federal government save when compared to the current state of technology?
  - 5. What future value does this technology offer to the DOD / federal government?
  - 6. What commercial best practices or processes do you plan to instantiate to deliver value to the government?
  - 7. How would your proposed solution, if successful, enable the commercial markets to do what they cannot already do?
  - 8. What future value does this technology offer to the commercial sector?
  - 9. Is your solution disruptive to the market, or does it provide incremental improvements to current practices?
  - 10. Detail the technical risks in your proposal that are to be solved under the DARPA program. How does DARPA engaging in this program accelerate the timeline for value, schedule, technical debt, and transition to commercial or DOD marketplaces?
  - 11. Proposers are free to provide further detail outside of the answers to the above questions as to why and how an OT allows the government to realize cost savings and thereby create added value.
- j. In addition to the above-required areas, the government may request that the proposer

provide additional information or detail with respect to its abstract. Proposers should expect to have approximately 45 minutes for presentation and approximately 30 minutes to address any questions from the government panel. Oral presentations are subject to the following constraints:

- No smaller than a 10-point font
- Video demonstrations are allowed.
- Completed OT agreement representations and certifications are available at the following link: <https://www.darpa.mil/work-with-us/reps-certs>.
- All presented material is to be submitted to [DARPA-PS-24-21@darpa.mil](mailto:DARPA-PS-24-21@darpa.mil) by the due date. Files containing Controlled Unclassified Information (CUI) must be encrypted when sending over the Internet. If the file size is too large for email, send an email to the address above for further instructions.

### **3.5. Oral Presentations – Process and Basis of Evaluation**

Oral presentation evaluation criteria are listed in order of importance. Individual presentations will be evaluated against the evaluation criteria described below:

- a. Technical Approach:** The proposed technical approach is reasonable, feasible, and innovative. The approach demonstrates an innovative yet feasible approach to address the identified technical risks and challenges and meet Trenton's metrics (Table 3).
- b. Relevant Qualifications:** Personnel and/or company experience and qualifications are accurate and relevant and demonstrate the ability of the proposer to meet the technical goals of the program.
- c. Budget:** The proposed solution is reasonable, realistic, and affordable.
- d. Data Rights:** The extent of data assertions will allow the government to realize the objectives of the Trenton program.

The government intends to give proposers the option to attend oral presentations in person or virtually. Note in either case, the government reserves the right to record presentations. The government will evaluate the information provided in the content submission (documentation), the oral presentation, and the Question and Answer session as the basis for evaluation. Oral presentations will be evaluated by the Trenton Program Manager with support from a panel composed of government subject matter experts (SMEs).

After completing the evaluation of oral presentations, DARPA will: 1) Engage in negotiations with selected performers, or 2) inform the proposer that its proposed concept/technology/solution is not of continued interest to the government and they are no longer considered for participation in the program. If DARPA does not deem the proposal selectable, DARPA may provide brief feedback to the proposer regarding the rationale for the decision.

## **4. AWARDS**

### **4.1. General Guidelines**

Upon favorable review of the proposal and subject to the availability of funds, the government may choose to award an OT-P agreement.

The Agreements Officer reserves the right to negotiate directly with the proposer on the terms and conditions prior to execution of the resulting OT-P agreement, including payment terms, and will

execute the agreement on behalf of the government. A copy of the draft OT agreement is attached to this PS for review. In order to streamline negotiations, proposers selected for oral presentations will be required to either attest to compliance with all OT-P agreement or note those they take exception to. Be advised that only a Government Agreements Officer has the authority to enter into or modify a binding agreement on behalf of the United States Government.

In order to receive an award:

- a. Proposers must have a Unique Identity Identification number and must register in the System for Award Management (SAM). Proposers are advised to commence SAM registration upon notification of entry to the competition.
- b. Proposers must also register in the prescribed government invoicing system (Wide Area Workflow: <https://wawf.eb.mil/xhtml/unauth/registration/notice.xhtml>). DARPA Contracts Management Office (CMO) personnel will aid those proposers from whom an oral presentation is requested.
- c. Proposers must be determined to be responsible by the Agreements Officer and must not be suspended or debarred from an award by the federal government nor be prohibited by Presidential Executive Order and/or law from receiving an award.
- d. Being asked to submit an oral presentation does not guarantee that a proposer will receive an award. The government reserves the right not to make an award.

#### **4.2. Controlled Unclassified Information (CUI) and Controlled Technical Information (CTI) on Non-DOD Information Systems**

Further information on Controlled Unclassified Information identification, marking, protecting, and control, including processing on Non-DOD Information Systems, is incorporated herein and can be found at [www.darpa.mil/work-with-us/additional-baa](http://www.darpa.mil/work-with-us/additional-baa). A program-specific CUI Guide has been established to help proposers determine CUI thresholds for information relevant to and technologies developed under the program. As CTI is anticipated for this program, foreign proposers are encouraged to understand U.S. export law and have a plan in place to obtain export licenses when necessary. Possible methods include teaming with a U.S. prime and/or having a U.S. subsidiary/parent company. Dependent upon selection for an award, the program-specific CUI guide will be provided to the performer to observe and follow.

#### **4.3. Representations and Certifications**

All proposers are required to submit DARPA-specific representations and certifications for OT-P awards to be eligible to receive an OT-P award. See <http://www.darpa.mil/work-with-us/reps-certs> for further information on required representations and certifications for OT-P awards.

#### **4.4. Competition Sensitive Information**

DARPA policy is to treat all submissions as competition-sensitive and to disclose their contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements. Input on technical aspects of the proposals may be solicited by DARPA from non-government consultants/experts who are strictly bound by the appropriate nondisclosure requirements.

#### **4.5. Intellectual Property / Data Rights**

The government anticipates unlimited rights, as defined in Section 5 of this PS, to intellectual property (IP) developed under the program.

#### **4.6. Procurement Integrity Act (PIA)**

All awards under this PS shall be treated as Federal Agency procurements for purposes of 41 U.S.C. Chapter 21. Accordingly, the PS competitive solicitation process and awards made thereof must adhere to the ethical standards required by the PIA.

### **5. PS DEFINITIONS**

**"Data"** refers to recorded information, regardless of form or method of recording, which includes but is not limited to technical data, software, mask works, and trade secrets. The term does not include financial, administrative, cost, pricing, or management information and does not include inventions.

**"Government Purpose"** means any activity in which the United States Government is a party, including cooperative agreements with international or multi-national defense organizations or sales or transfers by the United States Government to foreign governments or international organizations. Government purposes do not include the rights to use, modify, reproduce, release, perform, display, or disclose technical data for commercial purposes or authorize others to do so.

**"Government Purpose Rights"** means the rights to use, duplicate, or disclose Data, in whole or in part and in any manner, for Government Purposes only and to have or permit others to do so for Government Purposes only.

**"Nontraditional Defense Contractor"** is defined in 10 U.S.C. § 3014 as an entity that is not currently performing and has not performed, for at least the one-year period preceding the solicitation of sources by the DOD for the procurement or transaction, any contract or subcontract for the DOD that is subject to full coverage under the cost accounting standards prescribed pursuant to 41 U.S.C. § 1502 and the regulations implementing such section. This includes all small business concerns under the criteria and size standards in 15 U.S.C. § 632 and 13 C.F.R. Part 121.

**"Other Transaction"** refers to the type of OT-P agreement that may be awarded as a result of this PS. This type of OT-P agreement is authorized by 10 U.S.C. § 4022 for prototype projects directly relevant to enhancing the mission effectiveness of military personnel and the supporting platforms, systems, components, or materials proposed to be acquired or developed by the DOD or for the improvement of platforms, systems, components, or materials in use by the armed forces.

**"Prototype Project"** is described in the DOD Other Transactions Guide (Version 1, Nov. 2018) issued by the Office of the Under Secretary of Defense for Acquisition and Sustainment: [https://www.dau.edu/guidebooks/Shared%20Documents/Other%20Transactions%20\(OT\)%20Guide.pdf](https://www.dau.edu/guidebooks/Shared%20Documents/Other%20Transactions%20(OT)%20Guide.pdf).

**"Restricted Rights"** applies only to noncommercial computer software and means the government's right to use, modify, reproduce, perform, display, release, disclose, or transfer computer software is restricted, except that the government may use a computer program on a limited number of computers and make the minimum number of copies of the computer software



required for safekeeping (archive), backup, or modification purposes. The government will not transfer the software outside of the government or for any purpose other than the Trenton program, except that the government may allow the use of the noncommercial computer software outside of the government under a limited set of circumstances, including use by a covered government support contractor in the performance of its covered government support contract (management and administrative support), and after the contractor or subcontractor asserting the restriction is notified in writing as far in advance as practicable that a release or disclosure to particular contractors or subcontractor is planned to be made.

**"Small Business Concerns"** is defined in the Small Business Act (15 U.S.C. § 632).

**"Unlimited Rights"** means the rights to use, modify, reproduce, perform, display, release, or disclose technical data in whole or in part, in any manner, and for any purpose whatsoever, and have or authorize others to do so.

## 6. ACRONYMS

3DCP: Three-dimensional concrete printing  
AAA: After Agreement Award  
AA&S: Advisory and Assistance Services  
CDR: Critical Design Review  
CMO: Contracts Management Office  
CTI: Controlled Technical Information  
CUI: Controlled Unclassified Information  
DARPA: Defense Advanced Research Projects Agency  
FFRDC: Federally Funded Research & Development Center  
IP: Intellectual Property  
IV&V: Independent Verification and Validation  
MPa: Megapascal  
NDA: Nondisclosure Agreement  
OT: Other Transaction  
PDR: Preliminary Design Review  
PIA: Procurement Integrity Act  
PS: Program Solicitation  
ROV: Remotely Operated Vehicle  
SETA: Scientific Engineering Technical Assistance  
SME: Subject Matter Expert  
UARC: University Affiliated Research Center  
UUV: Underwater Unmanned Vehicle