

## **Request for Information (RFI) DARPA-SN-22-35 Virtual Testbed Services**

**Responses due July 15, 2022 12:00 PM ET**

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URL: <http://www.darpa.mil/work-with-us/opportunities>

The Defense Advanced Research Projects Agency (DARPA) Biological Technologies Office (BTO) is requesting information on simulation software for virtual mass casualty incident scenes to support the development of a potential new program. The ideal software will have the following characteristics:

- Fully featured simulation package with no additional paid tiers or features.
- If open source, extensible architecture that supports third-party development for simulator features, system models, and virtual environments.
- Capable of supporting many simultaneous and/or heterogeneous agents employing stand-off sensors (e.g., UAS-borne sensors, ground robot-borne sensors, diverse sensor phenomenology).
- Capable of supporting large-scale three-dimensional virtual worlds that realistically represent the real-world challenges of mass casualty incidents, which may include elements that partially obscure casualties (e.g., debris, buildings, overlapping bodies), complex surface textures, and additional environmental elements (e.g., low light, smoke/mist, mud, water, wind).
- Capable of supporting a wide range of stand-off sensors including (but not necessarily limited to): RGB camera, audio, lidar, radar, thermal, multi- and hyper-spectral, and infrared.
- Capable of supporting simultaneous multi-modal employment of the stand-off sensors.
- Capable of modeling realistic casualties, including variation in type and severity of injuries that medics evaluate when performing triage in mass casualty incidents.
- Capable of providing a sufficiently high-resolution environment where variations in subtle movements such as breathing or pulse would be detectable.
- Capable of modeling casualties with variation in pose, skin tone, sex, size, and age.
- Capable of modeling multi-modal stand-off sensor capture of casualty features.
- Uses physics-based models of inertia, actuation, contact, and environment dynamics to simulate agent's motion and interactions.
- Supports multiple physics engines capable of both maximal-coordinate and reduced-coordinate representations.
- Supports the Linux operating system, the Robotics Operating System (ROS), or other common robotics programming languages and robot control middleware.
- Supports automated simulation analysis, assessment, and scoring to provide necessary data logging and analysis tools for cloud-based evaluations.
- Includes an existing, extensive, and extensible library of sensors, platforms, and environments.
- Has the ability to run in cloud-based computing services and also be locally

hosted.

- Has the ability to run in real-time on a server as well as without a frontend for faster-than-real-time local simulations.
- Provides in-depth documentation, tutorials, support for feature requests, and other public-facing support systems.

## **SUBMISSION FORMAT**

Respondents to this RFI are encouraged to be as succinct as possible, while also providing actionable insight. Page limits for each section are indicated below. Format specifications for responses include 12-point font, single-spaced, single-sided, 8.5 by 11-inch paper with 1-inch margins in MS Word or Adobe PDF format (and, as applicable, PowerPoint).

Respondents are responsible for clearly identifying proprietary information. Responses containing proprietary information must be clearly marked on each page containing such information with a label such as “Proprietary” or “Company Proprietary.” **DO NOT INCLUDE ANY CLASSIFIED INFORMATION IN THE RFI RESPONSE.**

- A. Cover Sheet (1 page): Provide the following information.
  1. Response title.
  2. Technical point of contact name, organization, telephone number, and email address.
  3. Business size and classification (e.g. large, small, small disadvantaged, SBA Certified 8(a), HUBZone, service-disabled veteran-owned, etc.) under NAICS code 541715.  
Note: If a firm believes that another NAICS code applies, please provide in the response: 1) the applicable NAICS code, 2) the business size and classification under this NAICS code; and 3) rationale as to why this NAICS code should apply in lieu of 541715.
  4. Existing Government contract vehicles that could be used for this effort, if any.
  
- B. Technical Description (6 pages)
  1. Evidence of successful performance within the past five (5) years of similar or related work.
  2. Statement on business's capability to provide simulation software services meeting the requirements stated above.
  3. Statement of open source license to be used and any proprietary or paid features anticipated.
  4. Documentation of prior experience developing cloud-based architectures.
  5. Documentation of prior experience supporting DARPA or U.S. Government, if applicable.
  6. Evidence of a diverse and broad existing user community to include academic, industry, government, and international members.
  7. Documentation of existing library of sensors, platforms, and environments.
  8. Status and timeline of any ongoing developments required to perform this work.
  9. Schedule of milestones to be completed to meet a public release date of August 2023.
  
- C. Bibliography/References (2 pages)

D. Graphic Overview Slide (Optional): If desired, include a single PowerPoint slide that graphically depicts the main ideas of the response.

### **SUBMISSION INSTRUCTIONS AND CONTACT INFORMATION**

All responses to this RFI must be emailed to [DARPA-SN-22-35@darpa.mil](mailto:DARPA-SN-22-35@darpa.mil). Responses will be accepted any time from the publication of this RFI until 12pm on 7/15/2022. Early responses are encouraged.

All technical and administrative correspondence and questions regarding this RFI should also be sent to the same email address. Emails sent directly to the Program Manager may result in delayed/no response.

### **ELIGIBILITY**

DARPA invites participation from all those engaged in related research activities and appreciates responses from all capable and qualified sources including, but not limited to, universities, university-affiliated research centers (UARCs), and Federally-Funded Research and Development centers (FFRDCs), private or public companies, and Government research laboratories.

### **DISCLAIMERS AND IMPORTANT NOTES**

- This is an RFI issued solely for information and new program planning purposes; it does not constitute a formal solicitation for proposals. In accordance with FAR 15.201(e), responses to this RFI are not offers and cannot be accepted by the Government as such.
- Responses do not bind DARPA to any further actions related to this topic, including requesting follow-on proposals from respondents to this RFI.
- Submission is voluntary and is not required to propose to a subsequent Broad Agency Announcement (BAA) (if any) or other research solicitation (if any) on this topic.
- DARPA will not provide reimbursement for costs incurred in responding to this RFI.
- Any proprietary information should be clearly labeled as “proprietary.” DARPA will disclose submission contents only for the purpose of review and evaluation.
- Respondents are advised that DARPA is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this RFI.