Q&A #2 for Navy SBIR N241-011 - 01/05/24

1. What specific types of data or information would be required as inputs for the automated scenario generation toolkit to function effectively? For example, would it need geographical data, enemy unit compositions, specific mission objectives, etc.?
   Yes, anything that may be relevant to training objectives and scenario generation is potentially useful. This effort will inform what is possible and what is useful. Scenarios will include but are not limited to: entity starting positions, behavior/AI models for individual entities, terrain data, etc.

2. What are the desired formats for the generated scenarios; also would they need to adhere to specific LVC training standards?
   Scenario files should be compatible with the Next Generation Threat Simulation (NGTS). Scenario files are NGTS specific formatted JSON files with a .nscen file extension. An unclassified version of the Next Generation Threat System will be provided as GFI to awardees to support this requirement.

3. Would the scenario generation process need to be tailored to meet individual warfighters' specific needs or roles, or would it need to be designed to address training requirements for a group?
   Ultimately, any system should be able to do both. Proof of concept phase I can be scoped but should not exclude doing both in future. Focus should be on F-35 and F/A-18 aircrew.

4. Would the desired scenario generation capability need to be designed to function as an engine that can integrate with LVC tools such as NGTS, enabling them to be incrementally modified in response to dynamically changing scenarios in real time based on the evolving events and interactions within the simulation?
   Yes. The final solution must be able to be integrated with NGTS and its suite of tools and ideally be used in real time to support evolving events and interactions with simulators.

5. Is it necessary for the dynamic scenario generation capability to be compatible and integrate-able with specific LVC tools, such as NGTS, JSAF, AFSIM, etc.?
   Yes – priority of integration however is with NGTS to start

6. Would you provide some information about unclassified sample data that might be provided to performers in Phase I (e.g., text, voice data, KML files, scenario data)?
   An unclassified sample dataset will include an NGTS scenario file. Scenario files are NGTS specific formatted JSON files with a .nscen file extension. Sample DIS/HLA traffic logs will also be provided in ch10 format. Tools for reading the ch10 file format are provided with NGTS.

7. What types of air defense scenarios are most relevant for the training (e.g., missile defense, close air support, personnel recovery, etc.)?
   The focus will be on high threat density defensive counter air, integrated air-defense, and cruise missile defense scenarios.

8. Are there different proficiency levels among the trainee (student) warfighters that the desired capability needs to accommodate?
   Yes. Training should support end users who have reached various levels of proficiency at training objectives that support air defense mission sets.

9. Is the development of a voice-to-text translation feature expected in this project?
   NGTS contains a native voice to text translation capability, however, enhancements to said model in terms of speed and accuracy of translation, as well analytic features are expected.

10. Will the communication assessment include an analysis of what the warfighter hears and says, including their response to the clarity of incoming voice messages?
    Yes
11. Does the communication assessment involve evaluating communication effectiveness across various factors such as accent, gender, age, and noisy environments?
    Yes.

12. Will the assessment evaluate the presence or absence of uncertainty in the communication data?
    Yes.
13. Is the communication assessment limited to voice, or will it consider other forms of communication?
    Communication may involve other forms such as chat, link-16, etc.

14. Is there an existing assessment rubric for the current manual evaluation of voice communication?
    Nothing standardized but there are guiding documents as to communication requirements (doctrine) that will be shared as GFI; Where not doctrinated (or more fluid), input will be provided by GOV supplied SMEs

15. Are these assessments intended to be conducted at both the individual and the group levels?
    Nothing standardized but there are guiding documents as to communication requirements (doctrine) that will be shared as GFI; Where not doctrinated (or more fluid), input will be provided by GOV supplied SMEs

16. Can you explain the origin/history of the topic?
    This is a new concept to be explored as it is believed to benefit the speed of scenario development and accuracy of communications analysis given the burden of development on instructors/operators. This topic will help inform future requirements for such capabilities pending utility as determined by stakeholders and end users.

17. What would you consider a "home run" result from work in this topic?
    Goal is to develop technologies that we can use with NGTS to address Fleet gaps identified in proposal call as well as inform the limitations and possibilities of furthering these technology capabilities. Since there is no existing capability, there is no pre-defined "home run" with which to compare any results.

18. What are the key technical challenges that we need to make sure to address?
    Technical challenges are outlined in the call for proposal (e.g., scenario generation, comms analysis). Additionally, accuracy of speech translation remains a challenge due to noise, specific communication translation (comm brevity), speed, cadence, etc. Additionally, the speed at which translation occurs can also impact utility – debriefs occur within 30min of an exercise.

19. The topic covers communications analysis, scenario generation, and adversary behavior. Is there a priority among these?
    No. They are weighted equally in terms of priority.

20. Is the goal of the generated scenarios to challenge the execution of a mission (with communications being central to that execution) or to provide different types of communications challenges?
    Generated scenarios should provide tactically feasible variations to meet training objectives and present realistic opportunities to exercise prescribed communication procedures.
21. How central is technology transition to the primary goals of this topic?
    Any capabilities developed under this effort will need to integrate with the government owned NGTS software to fully transition. How this is achieved is over to the contractor to support.
22. What are the key risks we need to address in Phase I that would instill confidence about moving on to Phase II?
    Providing effective mechanisms for handling noise and a strong plan for integration with NGTS
23. How many Phase I awards to you anticipate? Phase II?
    This is an unknown and will depend on the funding available within the SBIR office upon the time of award
24. Do you know if there will be any CUI (controlled unclassified information), or CDI (covered defense information) associated with the project?
    Yes
25. Will the govt be providing any data or any Government furnished Information (GFI)?
    An unclassified sample dataset will include an NGTS scenario file. Scenario files are NGTS specific formatted JSON files with a .nscen file extension. Sample DIS/HLA traffic logs will also be provided in ch10 format. Tools for reading the ch10 file format are provided with NGTS. Additional GFI may be provided when doctrine guidance is provided at appropriate classification level
26. Do the follow steps encapsulate the requested technology development on this effort?
    a) High-fidelity Scenario Generation of LVC for training event
    b) Adaptive red-side agents to compete with blue in Scenario
    c) Recording of scenario and comm data
    d) Analysis of comm data to create debrief analysis of training event

    The technology development requested under this effort is identified in the topic call. The steps used to achieve these goals are ultimately defined by the offeror.

27. Scenario Generation:
    a. Does scenario generation include change in behavior of red side assets?
       Yes.

b. Does scenario generation include (platforms, sensor modes, payloads variations, comm link variation, etc.)?
   Yes.
c. Will operations goals vary in scenario generation (OCA/DCA, BVR Combat, etc.)?
   Yes.
d. Should scenario generation generate via text prompt? (e.g. generate and 3v4 OCA mission, with blue F-18, IRST pods , etc.)
   It is up to the offeror to determine the best means of input for scenario generation.

28. Adaptive red side:
    e. Is adaptation in this context changing parameters of the initial scenario?
    f. Is adaptation in this context developing red-side behaviors and AI agents that will adapt to blue during a training scenario?
       Both.
29. Communication Recording:
    g. What format will comms be provided in?
    h. Is existing technology being use for speech to text conversion?

    Audio will be captured via the DIS/HLA network in ch10 format. It can be extracted to a standard audio format. Additionally, audio will be transcribed to text using built in speech-to-text tools native within NGTS.

30. Analysis:
    i. Is the output for this analysis a standard pilot debrief with semantically meaningful text?
       It is up to the offeror to determine the best way to represent/visualize/report the learning points for debrief.

31. What are the key tactical elements you want AI-generated scenarios to emphasize?
    Scenarios will include but are not limited to: entity starting positions, behavior/AI models for individual entities, terrain data, etc. Currently, scenarios are generated manually by a subject matter expert. The term rapid implies the generation of many scenarios with varying conditions or parameters that can be produces faster than the current time if would take for a subject matter expert.

32. What does the unclassified sample dataset include?
    An unclassified sample dataset will include an NGTS scenario file. Scenario files are NGTS specific formatted JSON files with a .nscen file extension. Sample DIS/HLA traffic logs will also be provided in ch10 format. Tools for reading the ch10 file format are provided with NGTS.

33. Are there specific formats or standards that the datasets should adhere to?
    See above.
34. Are there any specific AI/ML models you especially interest in having explored?
    That is up to offeror determination.
35. What are the hardware limitations for AI models?
    The hardware constraints are TBD.
36. How do you define and measure communication effectiveness in air defense scenarios?
    Effectiveness is typically subjectively assessed by SMEs using guiding documents as to communication requirements (doctrine). These doctrine will be shared as GFI.

37. Are there existing methods or systems for noise filtering that you've used, and what have been their shortcomings?
    Speech-to-text models have been developed with filter noise within a representative environment.
38. Are there any specific technological ecosystems or programming languages preferred for this integration?
    Python or software that can be utilized within python (e.g. packages) are preferred to make for an easier transition into the NGTS ART ecosystem.