



S²MARTS Project 20-10C Prototype Hardware-in-the-Loop (HITL) Simulator Development

Request For Solutions (RFS) Questions & Answers / Posted February 22, 2021

1. **Question:** Phase 7 of this project requires accreditation of the HITL simulation. Can you provide an example of this process so we can determine the level of effort required?

Response: The main components of the accreditation process will be the documentation from the previous phases of the project, particularly the verification and validation information from Phase 5. We will provide an example of a previous accreditation report which should be similar to what you will be expected to support. Note that you will not be the author of this report, but you will be required to support the report authors (the Government accreditation agency) with information, answers to questions, and report review.

2. **Question:** Should we assume that the government will provide all exploitation characterization data and extracted or reverse engineered software code as GFE, or is there an expectation that some exploitation may be required?

Response: The Government will provide all existing exploitation and characterization data as GFE or GFI. If actual missile hardware is being used, then extracted or reverse-engineered software code may not be necessary. The only exploitation required would be to answer questions or issues that arise as part of the process of building the HITL simulator. You can assume that the baseline exploitation and characterization has already been performed and will be provided to you.

3. **Question:** An assumed HITL architecture includes an I/O box between the seeker console and digital components. Is it expected that an I/O box will be delivered for every threat, is there some smaller number of common I/O boxes that will be desired, or will the government provide its own I/O box for its RSIMS setup?

Response: We are requesting that an I/O box be provided for every threat simulator. At this time, we do not envision sharing of computers or I/O boxes between threat simulators. We want all of our simulators to be fully equipped and able to be operated in parallel. We have a design for the I/O box that we will provide and that we would like all Providers to use. However, we also recognize that it may be necessary or desirable to make changes or upgrades to our baseline I/O box design. We do not want to stifle creativity; rather, we want to foster an environment of innovation and continuous improvement. We ask that any proposed changes to the baseline I/O box design be provided to our team for review and final approval before implementation.

4. **Question:** The RFS states that up to 25 threat simulators will be required over 10 years, which is 2.5 threats per year. Does this represent the desired delivery schedule? Is there a desired delivery schedule or period of performance for the three specific threats?

Response: The RFS statement about 25 threat simulators required over 10 years is an estimate of the maximum need. This is not intended as an actual schedule requirement. The actual schedule will be determined by the availability of funding (see the answer to #6 below). We do not have a schedule for delivery of the three specific threats. These three threats may or may not be among the first simulators requested under this RFS. The purpose of identifying the three specific threats was to obtain pricing proposals from the offerors representing a range of threat complexities.

5. **Question:** We believe that we have a proposal participant that is participating to a "significant extent" due to hours and number of phases worked. However, is there a formal definition of significant participation for this project?

Response: "Significant Extent" is open to interpretation by the Agreements Officer. Non-traditional participants should be contributing in such a way that their contribution is key to the success of the prototype effort rather than by a percentage of work or number of hours. For example; this could be hardware, software, a design, some sort of technology, or a special expertise that they offer to the prototype development.

6. **Question:** Regarding the current project budget of \$500,000, please elaborate on the priorities of how the Government intends to start this effort. For example, does the Government want to receive specific deliverables for the current budget? If so, which ones?

Response: The current project budget of \$500,000 is a budgetary estimate only. All of the activity under this RFS will be determined by the availability of funding, pricing provided by the offerors, sponsor priorities, the availability of threat hardware, and the need for specific threat simulators. The initial projects requested may be for entire simulators (phases 1 – 7), or for a subset of these phases. Initial projects may represent the initial phases for a new simulator, or assistance with later development phases for simulators that have been initiated by our Government team.

7. **Question:** Section 5, Phase 5, it states that validation is the process of assuring that a given model accurately responds the same as the real-world system that it represents. What data will be provided to verify real-world threat system parametric and performance characteristics and how will that data be made available?

Response: The Government will provide all threat characterization and performance data that is available. This may include exploitation/characterization data, seeker test van (STV) results, all-digital flyout results, as well as data from other simulators (e.g. those operated by the GWEF or T-SPIL). The process of HITL simulation development may uncover additional questions or needed characterization parameters. Performers will need to work with the Government to generate this additional data. The only testing that the performer will be required to perform is signal-injection type tests on the seeker hardware provided by the Government. Validation data will be sent to the performers via electronic means (CD or SIPRNET if available).

8. **Question:** Section 5, Phase 5, it mentions that "Standard V&V documents from the Defense Modeling and Simulation Organization (DMSO) may also be used as templates. Certain V&V tests will be common to all threat missile simulators, . . ." So, would there be existing V&V documents in terms of test cases, pass/fail criteria, etc. that would be provided as GFI?

Response: Yes, the Government will provide existing V&V documents for the threat(s) of interest as GFI, if available. If no existing V&V documents are available, the Government will provide sample V&V documents from other threats that can be referenced for guidance.

9. **Question:** In Section 5, Phase 6, in order to verify the simulation runs against lab, captive flight test, and flyouts, is it expected that these comparisons will be performed against historically collected data or will there be real-time or new collection activities required to support Phase 6?

Response: These comparisons will be made against existing (historically collected) data.

10. **Question:** In Section 5, Phase 7, is the Government going to help coordinate the Performers interactions with the Government accrediting agency?

Response: Yes, the Government will coordinate the Performers interactions with the Government accrediting agency. The Government intends to be an integral part of this process. The Performer will take the lead (with Government input) on supporting the creation of the accreditation documents and answering questions from the accreditation agency. The accreditation agency will be the author of the accreditation report. Our goal is to integrate the Performer into our development processes as a partner.

11. **Question:** Section 5, Phase 2 states that an essential task is to acquire and test multiple alternative prototype simulator components. Is the intent to develop surrogate or replacement threat hardware such as processors or circuit cards and/or to develop alternative digital models? Would these alternative hardware and software components be used to represent possible future capabilities or threat versions, or to provide resilience for fragile components?

Response: The intent of Section 5, Phase 2 is to acquire and test components other than the threat seeker hardware. It is not our initial intent to create surrogates or replacements for threat hardware; however, if it is determined that this is needed, it will be addressed at that time with new price requests. For the initial three simulators used for cost estimates, we do not anticipate a need to replace threat hardware under this agreement. However, it is possible that the Performer may be asked to integrate surrogate threat hardware that has been developed separately from this agreement.