TEXAS A&M UNIVERSITY-CORPUS CHRISTI
PURCHASING DEPARTMENT 6300 OCEAN DRIVE
CORPUS CHRISTI, TX 78412

RFP Number:

RFP1-0005

Modeling and Simulation Capability

Addendum # 1

The University has received the following questions from vendors. The corresponding department has provided answers for the questions provided within the allocated time to respond. The questions and answers should be considered incorporated as part of this Request for Proposals. Please see below:

1. Question: Can you identify training goals for each personnel type? Please provide in detail the Lone Star's personnel types: UAS Aircrew, Training personnel, Visual Observers & Public Safety personnel
   Answer: The UAS Aircrew will include the Remote Pilot In Control (RPIC) and the GCS Operator (GCSO). The RPIC will operate the HCU during flight while the GCSO will operate the GCS. Training Crew will be observers of the UAS Crew – they should be able to observe the views that both the RPIC and GCSO have on a separate monitor. Visual Observers (VOs) are personnel that are placed in various places around the testing area in order to keep the UAS in LOS. They should be able to have a view that corresponds to their location, not the location of the RPIC/GCSO. Public Safety Personnel (PSP) can be any PSP such as Fire Department, Police, etc that are involved in the testing. They should be able to have views that correspond to their locations (like the VOs).

2. Question: What is the format of these simulated constructive models on the Lone Star Cirrus application.
   Answer: The data will be passed to/from the Lone Star system via REST APIs that contain data such as Telemetry, Flight Volumes, etc. The APIs are flexible so they can be modified if need be.

3. Question: Could you please describe in detail a Simulated HCU, would they be compatible thru USB? Please provide the required number of inputs.
   Answer: A simulated HCU needs to give the Remote Pilot In Command (RPIC) the same sensory feel that the RPIC would have using the actual HCU for the aircraft. Depending on the UAS/HCU, it would need throttle/yaw controls and pitch/roll controls. It would also need switches to be able to change from different flight modes (Manual, Loiter, Auto, etc). It might also need switches or controls to move a sensor gimbal and active the sensor.

4. Question: Please clarify which interfaces/functionalities of GCS will be simulated and which will be real.
   Answer: If the vendor can integrate the actual GCS, that would be preferable. However, if that is not possible, all the functionality of the GCS would need to be simulated in order for the GCS Operator (GCSO) to train properly.

5. Question: Are you planning to integrate / modify existing GCS interface to match proposed mission planners?

   Answer: Yes, to integrate. No to modify. However, some of the GCSs are merely computers running the Mission Planning software (such as Mission Planner, uGcs, etc).

6. Question: Are you considering using existing missions generated by proposed planning software application?
   Answer: Yes.

7. Question: Please specify the type of headsets that are required for the system. How many VR headsets do you want quoted with the initial base system? Please consider that each VR headset requires an additional computer.
   Answer: No specific type of headset is required. However, a Mixed Reality headset may give the best solution for the RPIC and GCSO. For Phase I, there should be a VR head set for the RPIC, GCSO, and at least 1 VO.

8. Question: In relation to the models to be provided: What are the pilot training objectives? Target/cue/visual scanning/search, controlled conditions? Are Primary and/or secondary tasks expected?
   Answer: RPIC and GCSO training should be such that they can perform all tasks necessary in a mission. From Flight Planning, manual flight, auto flight, visual scanning, sensor operation, emergency procedures, communication with Test Director, etc.

9. Question: In relation to the models to be provided: What are the VO training objectives? Sky scanning, pre-flight, communications?
   Answer: Sky scanning to ensure UAS is always visible and to ensure other aircraft do not enter the flight path of the UAS. Communication with the Test Director/Aircraft Safety Officer with information about the UAS/other aircraft. VO should have view from the location that they will be, not at the viewpoint of the RPIC/GCSO.

10. *Question*: Please specify what flight data needs to be recorded in the base flight system. Is it data about ownership only or all data?
    Answer: All UAS telemetry data. If there are ATC data transmissions, those should also be recorded.

11. *Question*: Please describe in detail the method in which you intend/desire to playback data in the simulation system.
    Answer: Telemetry from all flights in the system must be able to be recorded (NOTE: not necessarily all simultaneously). Then, the recorded data for any of the aircraft can be reinserted into the simulator.

12. *Question*: Are simulator stations to be located at the same center or at remote sites?
    Answer: Same Center initially. Possibly some stations remotely at a later date.

13. *Question*: Can you provide a list of malfunctions / number of faults and the responses expected?
    Answer: Examples include Low Battery, Loss of C2, Loss of Navigation, etc. Responses can be Return To Base (direct flight to Base), Smart Return to Base (follow flight path back to Base), Land Immediately, Loiter, etc. depending on the pre-flight planning.

14. *Question*: Could you please provide the geo coordinates and the bounding area for the Lone Star flight testing sites (Corpus Christi/Port Mansfield/etc)? If we don't have these areas, do you want them quoted?
    Answer: Corpus Christi center is approximately (27.79081480936113, -97.4053820020164) and the surrounding area. Port Mansfield center is approximately (26.557906, -97.436346) and the surrounding area. Yes. A quote for the areas would be desired.

15. *Question*: Please describe what you mean by simulated air traffic control communications. Is this voice communications for role playing and/or electronic code communication? What type of communication needs to take place?
    Answer: Yes. It would be voice (or possibly data) communications that allow for role playing for training purposes. Basically, the data traffic that would normally occur it was if a manned aircraft. Examples include submitting flight plans, requesting clearances, etc.

16. *Question*: Besides FLIR and Radar, what other sensors do you need to model ?
    Answer: EO, TV, LIDAR, experimental meteorological sensors, cameras

17. *Question*: What is the source of the live air traffic control communications? Is it VoIP, live comm via headset, voice to text?
    Answer: This has not been fully determined yet.

18. *Question*: What is the period of performance of phase one and of each subsequent phase?
    Answer: This contract shall be for a period beginning on the date of award or the last signature date, whichever is later, and ending upon a submission of a completion report required with 120 days after final execution of contract. The report shall provide details and verification of all Modeling and Simulating capabilities completed.

19. Question: Does this RFP correspond specifically with Phase 1 of LSUASC M&S requirements?
    Answer: Yes. However, solutions for more than one Phase of the RFP may also be provided as a supplemental.

20. Question: Can you provide the names of specific UAS's that should be modeled in Phase 1?
    Answer: For Phase 1, at least 1 of the existing Lone Star UAS should be modeled. Lone Star currently has the following in inventory:
    1. DJI Mavic
    2. 3DR Solo
    3. UAV Factory Penguin C
    4. Tarot X-6
    5. 3DR IRIS
    6. Anaconda
    7. Skyviper Journey

21. Question: Can you provide more details on Phase 1 Requirements "g" and "h"? In particular, what level of integration with the referenced systems is required upon completion of Phase 1?
    Answer: For Phase 1, for whichever UAS is modeled, both the HCU and the GCS needed to either be modeled or the actual HCU and GCS needs to be able to integrate into the system in order to allow the UAS to be controlled, both manually and in autonomous flight.

22. Question: Is there a preference towards Firm Fixed Price or Time & Materials for this contract?
    Answer: Firm fixed pricing is preferred.

23. Question: What is the target computer platform (Windows, Linux, etc.) for the solution?
    Answer: Lone Star is agnostic on the computer platform that is used to create the M&S solution as long as it will be able to connect to other systems, either via APIs or other means.

24. Question: What are the travel requirements for this effort? 1) How many trips? 2) How many days per trip? 3) What is the purpose of each trip?
    Answer: Travel requirements would be determined by the vendor in order to ensure that their system can be installed, integrated, and tested and Lone Star personnel can be trained on its use. There is no specific requirement from Lone Star for any definite number of trips. The University does request that vendor use current applicable GSA rates.

25. Question: Can you provide more details on Phase 1 Requirement "i" including which protocols and specifications need to be implemented?
    Answer: Lone Star employs numerous REST APIs to allow data to be passed to/from its systems. The simulated UAS need to be able to connect to these APIs.

26. Question: Can the proposal be submitted electronically using secure means?
    Answer: No, all responds must be submitted on digital media, i.e. thumb drive.

27. Question: Can we get confirmation that the expected final delivery date for solutions developed under this contract is 120 days?
    Answer: Customer is requesting 120 days, however vendor can state their time requirement that is needed to complete task as part of their responds.

28. Question: Section 2.1.1 - In the context of missions, what are the roles of UAS Aircrew, Training Personnel, Visual Observers, and Public Safety Personnel?
    Answer: The UAS Aircrew will include the Remote Pilot In Control (RPIC) and the GCS Operator (GCSO). The RPIC will operate the HCU during flight while the GCSO will operate the GCS.
    1. Training Crew will be observers of the UAS Crew – they should be able to observe the views that both the RPIC and GCSO have on a separate monitor
    2. Visual Observers (VOs) are personnel that are placed in various places around the testing area in order to keep the UAS in LOS. They should be able to have a view that corresponds to their location, not the location of the RPIC/GCSO.
    3. Public Safety Personnel (PSP) can be any PSP such as Fire Department, Police, etc that are involved in the testing. They should be able to have views that correspond to their locations (like the VOs).

29. Question: What is the preferred HCU?
    Answer: This depends on the UAS that is modeled. The HCU should be matched to the that specific UAS. If more than one UAS is modeled, then HCUs for each UAS will need to be modeled.

30. Question: To minimize travel, will TX A&M-CC supply any hardware/software that's necessary to perform integration and testing?
    Answer: No. It is anticipated that the Vendor will supply all hardware/software necessary for the integration and testing

31. Question: Will TX A&M-CC have dedicated personnel available to answer questions, assist with integration and testing, and provide assistance in general?
    Answer: YES. Lone Star personnel will be available to help will all of the integration and testing

32. Question: Section 3.4 - Is a USB a thumb drive?
    Answer: Yes

33. Question: Will there be any form of notification when inquiry responses are posted?
    Answer: Vendor responds are not publicly posted. A bid tabulation document will be available at the end public bid opening.

34. Question: At what point will the websites referenced for query responses be brought online? "http://esbd.cpa.state.tx.us" & "http://falcon.tamucc.edu/~purchase/bids/bidopportunities.htm" both fail to load at the time of this writing.
    Answer: These websites are for posting bid opportunities only.

This document and attachments shall be attached to and become a part of the contract documents for this project. This addendum shall be signed for acknowledgement that you have received Addendum #1 and shall be returned with your proposal.

COMPANY NAME: _____

STREET ADDRESS: _____

CITY/STATE: _____

TELEPHONE AND FAX: _____

SIGNATURE: _____DATE: _____