

Phoenix Operations BAA Proposer's Day
Questions + Answers
February 8, 2013

1. Based on the original CONOPS, Servicer/Tender launch has sufficient satlets for the 1st demo. Can we launch hosted payload after the servicer/tender launch?
 - a. Yes.
2. For interlinking multiple N-DOF facilities, is the idea to implement a distributed, coordinated mega simulation? (i.e. do you want one coordinated dynamic satellite simulation?) What level of coordination here?
 - a. The SBIR software is investigating how to get N-DOF results out to any simulation anywhere. There is no requirement for a 'mega' simulation.
3. What is a 'reasonable' cost number for hosting POD on GEO sat?
 - a. There is no specific cost target
4. Does DARPA want to be able to run the simulations from your desktop at DARPA?
 - a. There is no requirement for this. The goal is to be able to interlink any simulation from any facility via a software based "app".
5. Can you further describe the high data rate communication payload that you have obtained from another DARPA program? What frequency, antenna size, gimbal range for antenna pointing, etc.
 - a. DARPA is not ready to release this information until all aspects of its integration into the program are completed. The system is sufficient to provide up to 10 Mbps of downlink data, vice a typical S-band is limited to ~2 Mbps.
6. What initial TRL do you expect for an RPO sensor?
 - a. High. You will have 4 months to get to a CDR-like design and must deliver within 18-20 months for final integration and test with the Servicer/Tender.
7. Is there a preference for active or passive sensing? Sensor waveband?
 - a. There is no preference - it is up to each provider. We are interested in seeing the proposed performer inputs.
8. If our sensor requires minor visual aids such as a reflecting tape on the component being 'handled', is this acceptable?
 - a. Any sensor(s) must be suitable for *a priori* aides (such as for the POD) and non-*a priori* knowledge of the RCA.
9. For TA12, what is the expected deliverable that will be requested in the BAA?
 - a. A single POD host to GEO, integration to the satellite, launch, and coordination with Phoenix team prior to dispensement on-orbit.
10. Please confirm Phoenix mission success doesn't require 2-way communications (space/ground)
 - a. Phoenix has multiple criterions for mission success. The ApSat communications demonstration, although it is just one of them, is the final criterion in the mission sequence.
11. Will industry partners be indemnified by the US government?

- a. Uncertain if indemnification is needed. The mission RCA partner agreement will be with the USG, and the mission demo is for a retired non-operational, non-live satellite.
- 12. Will ground C2 partners have to bid AFSCN or USN services?
 - a. AFSCN – no, but the proposer must identify how to integrate within that architecture. USN (or other) – please identify, suitable worldwide ground antenna services.
- 13. Are the PODs entirely passive? If not, what spacecraft functions do they have (e.g. communication, ACS, propulsion, etc)?
 - a. The POD design is still under development. There is a range of on-board operations and functions being considered, either as a part of the POD itself, or indigenous to the satlets that are carried on board.
- 14. Are the PODs captured using a robotic arm? Is the capture mechanism (tool) already chosen?
 - a. Yes, the planned capture is a special tool attached to the end of the Phoenix primary robotic arm that is already under work.
- 15. Can you discuss how the Phoenix program balances the parts criticality and COTS/cost equation?
 - a. Balance between high reliability parts and keeping costs low depends upon the specific platform modality. The Servicer/Tender looks at higher reliability parts where applicable to maintain high degree of on-orbit operation and life; satlet parts are based on more COTS based systems as the satlet architecture gets its reliability from aggregation and high number of units.
- 16. Will the Virtual Ground Station Operations (VGSO) performer provide the operations center (or facility)?
 - a. It is expected that a proposer for the VGSO have an existing facility/center/building to house the Phoenix operations team, as well as possibly the robotic payload tele-operations module (which may include a single or double station of robotic hand controllers, video displays and computer displays).
- 17. What is the relationship between the VGSO and the prior BAA tele-operations algorithms and software?
 - a. The BAA-12-02 payload robotic tele-operations performers are developing the modules that will be either housed inside the VGSO facility/center/building, or hook to the VGSO via wired connection remotely.
- 18. Will the VGSO develop the ground operations system and integrate the tele-operations software as modules, or provide the higher level facility and communications?
 - a. It is expected that the VGSO will provide the higher level facility and operations equipment for the Servicer/Tender (with input from the S/T team for scripts and rendezvous proximity operations and maneuver planning), and either host the tele-operations module internal, or provide a real-time wired link to the facility. Note, existing facilities and equipment are preferred to both save cost and integrate into an existing ground architecture and system.
- 19. Can the BAA topic areas be combined into one proposal concept by a company or a team? Does the government have a way to score the value of such an approach?
 - a. No, each TA must be a separate proposal.

20. How firm are the five technical areas for inclusion in the BAA? (The words “might be in” were used).
 - a. They are firm, expect no more than 5.
21. A point was made that the high performance ground to spacecraft (servicer/tender) link was GFP. However, it showed up on the block diagram as a “rose-colored” BAA 13-12 procurement item. Can you clarify?
 - a. This was a typo, it is GFE.
22. Will system level testing be performed in the BAA-procured N-DOF test facility?
 - a. This depends upon the facility and what systems it can support in test, and the type of tests that may be done. Primary system level testing will be done at the Naval Research Laboratory (NRL), and inclusion of other N-DOF’s will be based on the capabilities of each.
23. Can we propose a software-only solution to the RPO sensor suite, much like the IPAS, that integrates other proposed sensors to provide pose, etc.?
 - a. Yes
24. How/where will IPAS software be hosted? What restrictions apply in terms of CPU, memory, etc.?
 - a. The hosting of the IPAS software will be 1 of 2 places – a performer provided box or processing system integrated into the bus, OR, onboard a payload controller unit onboard the bus, that is GFE.
 - b. There are no restrictions on memory, etc. until the CPU is identified. Recommendations on what will be required will be useful in identifying a processor from any proposer.
25. Can government agencies, FFRDC’s etc. be primes or subs on Phoenix BAA?
 - a. Yes, per the restrictions identified by the BAA. Note also that NRL is part of the Government’s technical team.
26. Will TA11 be soliciting the build and delivery or lease of physical spacecraft or robotics ground consoles and software for mission operations?
 - a. We are interested in existing spacecraft operations consoles/displays and software, not in building or purchasing any new systems. It is expected to be integrated w/ robotic consoles within a GFE module delivered to the operations facility, or connected via wired connections remotely.
27. Does the RPO sensor(s) suite include an active ranging option?
 - a. This is up to the proposer.
28. Is there a cost goal for the RPO suite or sensor(s)?
 - a. Low. Expect higher TRL hardware/software for the RPO suite or sensor(s).