

Questions and Answers Regarding SN-09-14

Updated February 19, 2009

Please submit any further questions to DARPA-SN-09-14@darpa.mil.

Questions submitted through February 4, 2009:

Q1. I want to brief the government on some of the technologies that my company has developed. Can I sign up for the 15-minute sidebar?

A1. The sidebars with the government are intended for organizations that are interested in serving as a lead organization when bidding to the anticipated BAA. The primary topic of interest for the government is to understand the capability of the organization to lead the development, fabrication and demonstration of a large scale, advanced technology rotor – through flight test – that meets the objective attributes stated in the Special Notice.

Q2. The SN states that the government is interested in a “large-scale” rotor. What does this mean? Can we flight test the rotor on a light helicopter or an unmanned aircraft?

A2. The government has specified “large” in order to balance the risk and cost associated with this rotor development and transition to the next generation of military rotorcraft. Bidders will need to postulate the appropriate size for their objective rotor; however, size limitation of available ground test facilities may be a practical upper limitation for edgewise and/or tilting rotor diameter. The government believes that flight test of a rotor with nominal 1.0g thrust of 18,000 lb to 36,000 lb (per rotor) would provide sufficient internal for prototype versions of adaptive technologies, be capable of isolated rotor operation in existing test facilities, allow the use of a wide range of existing military rotorcraft as potential demonstrator platforms, and minimize the residual scaling risk for transition to medium and large future rotorcraft.

Q3. Can a “technology vendor” propose to Phase I only, with the plan to team with a rotor company at the conclusion of Phase I? Can a “technology vendor” propose to only part of the Phase I BAA, e.g. component and/or sub-scale testing?

A3. The Phase I effort will include the development of a technology maturation plan for future phases that culminate in a flight test of the proposed adaptive rotor capability. This must include top-level technical plans and Rough-Order-of-Magnitude (ROM) costs for these subsequent phases. For the Phase I proposal, bidders are expected to show their ability to do all phases of the MAR program, with teaming agreements and firm plans in place for Phase I. Offers that propose completing Phase I only will not meet this expectation. Phase I proposals may include assessment of a variety of technologies that the proposer would then downselect to a preferred approach. Two opportunities – a 5 minute technology presentation and a poster session – are provided during Industry Day specifically for organizations with adaptive approaches to showcase their technologies and capabilities to organizations considering serving as a lead organization in response to the anticipated MAR BAA.

Q4. Can one organization submit multiple proposals? Can bidders and technology vendors be on multiple teams?

A4. There will not be a limit to the number of proposals that an organization may submit. Proposers may elect to team with one another and proposers may participate on multiple teams. Each proposal, however, must clearly exhibit that its proposed team is working towards a common objective and has a single management structure. For all resources (e.g. individuals and facilities) included in an offer – especially those included in multiple proposals – the ability to support the proposed effort must be confirmed.

Q5. How long is the intended MAR program? What is the intended content of future phases? How are these phases allocated? What is the total amount of potential funding available?

A5. The timing, duration and funding required for the MAR program is left to the bidder to decide; the bidder should propose a program that it believes is the most expedient way to reduce risk for successful transition of the adaptive technology to a future military rotorcraft. Notionally, the government envisions Phase II to include a preliminary design review (PDR) and a critical design review (CDR) of the demonstration rotor, concluding with ground testing of the complete rotor, such as in a large wind tunnel. A decision gate on proceeding will be made after CDR, and again after the ground testing. Phase III would include flight testing the rotor, such as on an existing military rotorcraft.

Q6. The SN states “Attendance will be limited to a maximum of two individuals per organization.” My company is part of a corporation that is comprised of multiple companies, some of which may also be interested in bidding. Is an “organization” considered to be a “company” or “corporation”?

A6. The intent is to provide the opportunity for as many interested parties as possible to attend the Industry Day, though attendance is not required to submit a proposal. The “two individuals per organization” rule is to ensure as many different organizations as possible can attend. “Organization” here means an entity that intends to submit a prime offer (an “interested bidder”) or an entity interested in teaming with a prime offeror (a “technology vendor”). Similarly, universities within the same university system are considered separate organizations, but departments or schools within a university are considered a single organization. After February 13, the government may allow additional individuals from each organization to attend if space permits.

Q7. How many awards are intended to be awarded for Phase I? How much will each of the awards be for?

A7. If a BAA is released, multiple awards are anticipated, but the government reserves the right to accept all, some, one, or none of the proposals received. The amount of resources made available under this anticipated BAA will depend on the quality of the proposals received and the availability of funds.

Q8. We have developed a technology that potentially can have a dramatic impact for morphing rotor applications. Can we attend the Industry day and provide a 5 minutes open briefing as a technology vendor, without first joining any potential future team bidder?

A8. Yes. A major objective of Industry Day is to provide the opportunity for organizations to expose their technologies to organizations who are considering bidding

as a lead organization. The 5 minute presentations and the “Poster Session / Industry Networking” time is specifically intended to assist in facilitating this information exchange.

Q9. Are foreign-owned companies or foreign nationals eligible to propose?

A9. Foreign participants and/or individuals may participate to the extent that such participants comply with any necessary Non-Disclosure Agreements, Security Regulations, Export Control Laws, and other governing statutes applicable under the circumstances (e.g. ITAR).

Questions submitted after February 4, 2009:

Q10. My organization already has 2 people signed up. I want to be put on the list to be the 3rd person if additional spaces open up after February 13. How do I sign up to be an alternate?

A10. After February 13, 2009, the Government may allow an additional individual or, space permitting, multiple additional individuals from each organization to register. If it is determined that space is available, the Government will directly notify all registrants (on or after February 17) from organizations that have already signed up two persons, to inform them that additional space is available. A notification will also be posted on the registration web site (<https://safe.sysplan.com/mar>). The additional openings will be in a first come, first served basis through the registration web site. Note that the website will remain open for registration of additional organizations through 5:00 pm EST, February 20, 2009, as long as space allows.

Q11. When do we have to let the government know that we want to make a 15 minute pitch to the Government folks?

A11. The registration website will be up until close-of-business on Friday February 20. You are welcome to reserve a slot up until that time. If you make a reservation, you are welcome to cancel it at any time, with no penalty or prejudice.

Q12. The Industry Day Announcement requires contractors to submit their 5 minute briefing and poster material by February 24, but doesn't show a due date for the 15 minute proprietary presentations.

A12. The solicitation states that “presentations must be appropriately marked and provided on CD-ROM (in PC-compatible format) upon arrival at the proprietary presentation meeting or sent via secure means ahead of time.”

Q13. I plan to subcontract to a prime bidder, but would like to brief the government on my technologies. The plenary presentation and the poster session wouldn't allow me to present anything useful. Can I sign up for one of the 15 minute proprietary slots?

A13. The 15 minute proprietary sessions with Government representatives are restricted to those organizations that are interested in serving as leads when bidding to the anticipated BAA. The primary purpose of these discussions is to provide an opportunity for potential prime companies to provide a brief overview of their technologies and approaches, their assessment of the feasibility, and their interpretation of the MAR goals

and objectives. Technology vendors should establish whatever non-disclosure agreements they require with interested bidders and share information outside of the Industry Day. The Industry Day meetings are only intended to introduce organizations to each other and help facilitate initial discussions. However, the Government is interested in hearing from technology vendors on their proprietary adaptive rotor technologies and approaches prior to the release of a solicitation, but Industry Day does not have a time arranged for that purpose; information on means of follow-up will be discussed at Industry Day.

Q14. I am a government employee who is interested in attending the DARPA MAR Industry Day. Please let me where to register as a Government employee.

A14. Please send an email to DARPA-SN-09-14@darpa.mil for consideration. Space is limited, so only selected government personnel will be invited to attend.

Q15. I am the editor-in-chief of [xxxxxxx] magazine. If possible, I would like to attend the Mission Adaptive Rotor industry day. I would like to include an article on the program in an upcoming issue of the magazine.

A15. The industry day is only for industry and academia, and invited government attendees. It is not open to the media or public. Entry into the meeting will be strictly limited to those whose registration has been approved and verified. All requests for information from the press should be directed to the DARPA Public Affairs Office, Ms. Jan Walker at Jan.Walker@darpa.mil.

Q16. The link in the Word document for the subject BAA Industry Day registration web site does not work. Could you please provide the correct link?

A16. The URL is correct (<http://safe.sysplan.com/mar>), but some computers may have trouble with the period immediately following the link, ending the sentence. If you remove the period, it should work.

Q17. What do you mean by the term “marinization”? Does the MAR demonstration rotor need to be marinized?

A17. The demonstration rotor does not need to be marinized, as a demonstration of the shipboard compatibility is not required; however, comprehensive engineering analysis in Phase I should show the impacts on the proposed rotor system for making the rotor shipboard compatible. Shipboard compatible is defined as being completely ship-suitable (e.g. capability to effectively operate from an Arleigh Burke-class destroyer in high sea states, folding, corrosion resistance, etc), where the aircraft is able to “live” and operate aboard the ship.

Questions submitted after February 12, 2009:

Q18. The announcement states that the intent of the program will be to “develop ‘on the fly’ morphing rotor technology” with the “capability to reconfigure the rotor in flight.” Does DARPA consider folding and/or stopping a rotor or tiltrotor as “morphing rotor technology?”

A18. Yes.

Q19. Will DARPA consider development and demonstration of multiple different rotor configurations with different trades of system attributes an acceptable offering over the life of the program or is the expectation that one solution that best meets all notional missions is the desired outcome?

A19. Each award may initially study several different approaches, but Phase I is intended to result in one approach for demonstration (potentially with back-up technologies and/or implementation approaches).

Q20. The Industry day announcement provides objective attributes and states that “DARPA seeks to understand the trade space available and the impacts of adaptive technology.” It is assumed that DARPA requires all the three attributes to be satisfied simultaneously in all notional missions. Does DARPA plan to offer a weighting of the desired attributes? Is it expected that the offeror will use the notional mission profiles to perform an operational effectiveness analysis in trading off system attributes? If so, does DARPA plan to provide what metrics for the Operational Analysis they consider most important?

A20. The goal is to understand the extent to which each objective can be achieved independently and in combination with a single adapting rotor system. Determining the relative value (benefits and costs) of achieving each combination of improvement in different missions and applications is a desired outcome of the Phase I effort.

Q21. Since the performance improvements are stated in terms of range and payload, one has to pick a platform and associated non-adaptive rotor. Does the morphing rotor technology have to be compatible with the platform? For example, if my morphing technology happens to increase radius, I have to do something to my platform (fuselage/tailboom/wing plug) to accommodate this new rotor. The payload/range requirements need to be assessed at the aircraft level and not just at the system level, correct?

A21. Yes, payload and range payoffs only make sense in the context of a total aircraft design. It is expected that the offeror will synthesize two aircraft designs to assess the MAR performance improvement: one with a baseline non-adaptive rotor design and a second design taking advantage of the MAR technology. The two designs should use consistent design characteristics for all aspects besides the MAR technology (e.g. installed power, fuselage structural technology level, etc).

Q22. How will the vibration criteria be defined? Will the focus be at only at N/rev or will other frequencies be included? All axis need to be considered? Is 1/rev included in the criteria? Will the criteria apply to level flight and maneuvers and all mission segments? Does DARPA have comprehensive criteria in mind?

A22. The goal is to understand how MAR technology may be used to achieve a low vibration environment with minimum impact on system weight and complexity. For this effort, it will suffice to show reductions in N/rev and 1/rev vibratory loads in the non-rotating system. For the purposes of establishing reductions, the baseline vibratory loads should be those predicted or measured for a similarly-sized state-of-the-art fixed-geometry rotor, including any rotating-system vibration treatment (pendulum absorbers, etc). Proposers should demonstrate (initially by analysis, and later through testing) a 90%

reduction in vibratory forces and moments along the axes in the non-rotating system. Additional definition will likely be provided in the BAA, if released.

Q23. The SN states that “Phase I would focus on the conceptual design of an objective rotor system on a notional future rotorcraft, that exhibits the desired Mission Adaptive Rotor benefits.” Does this mean that the lead or prime contractor must have a notional future rotorcraft concept or program to be considered for the MAR program? Can the lead or prime contractor utilize existing assets to develop an advanced rotor which then can be scaled up to notional future rotorcraft programs that the prime or lead contractor could engage in?

A23. The words “focus on” here places undue emphasis on the design of the “notional future rotorcraft.” The words “focus on” should be replaced by the word “include”; this will be corrected in a forthcoming clarification to the SN. The focus of Phase I is actually the previous sentence: “A BAA for Phase I activity would include rotor system design to a Systems Requirements Review, development of demonstration plans, and any appropriate component and/or sub-scale technology risk reduction.” The “notional future rotorcraft” is only intended to establish a basis for the benefits of adaptation. The approach in question (“utilize existing assets to develop an advanced rotor which then can be scaled up to notional future rotorcraft”) is acceptable.

Q24. What is your projected BAA release after the Industry Day? What is your projected due date for the proposal after the BAA release?

A24. It is anticipated that a BAA release, if it occurs, will be within 1-2 months after the Industry Day. It is anticipated that responses would be due within 45 days after release of the BAA.

Q25. There is some concern that technologies may be left behind as teams are formed and downselects occur going forward. What is DARPA’s approach for small technology companies that may be enablers with respect to exclusive business arrangements with a particular prime?

A25. Collaborative efforts/teaming are encouraged. Due to the complexity of the technical challenges on this program, DARPA seeks the strongest teams possible to ensure a MAR development and demonstration plan that meets program objectives. The government is desirous that as many potential technologies as possible be considered by Proposers; thus technology providers are encouraged to have their technology considered by as many Proposers as feasible in order to enable the strongest technology approaches possible.