MAR Industry Day
Questions and Answers

Written Questions and Answers

Q1. Is the work performed and the results (including patents) subject to ITAR restrictions? Can the resulting technology be applied to commercial helicopters (used for commercial applications)?
A1. We anticipate that ITAR restrictions will apply to any information generated under this effort.

Q2. May need to look at "net availability" improvements…. An adaptive rotor will without a doubt contribute negatively to R&M. But, it could enable the ability to carry enhanced CBM capability via improved payload & ability to carry more CBM gear. Government comments, please.
A2. Although the blade R&M may degrade, the Government believes that at the system level, the overall vehicle R&M may improve (vibration, duty cycle, swashplateless, etc.). The purpose of the Phase I study is to understand the opportunity and impacts of adaptive technologies.

Q3. CAPT Flight had a bullet regarding "Beyond V-22 capability". Please elaborate on the interest here.
A3. This was an informal reference to possible future procurements.

Q4. You mentioned "swashplateless" a number of times. No doubt a fascinating technology, but I don't understand how Swashplateless fits into the MAR program. It's not like I would operate with a swashplate in some conditions and Swashplateless at others. What am I missing?
A4. The government believes that on-blade controls offer the ability to eliminate the swashplate.

Q5. Would NASA ground test facilities such as wind tunnel and anechoic facilities be made available as GFE and would the 40x80 ft Ames tunnel be upgraded to conduct wind-on rotorcraft noise propagation testing for the Phase II effort?
A5. The cost proposal must include all costs, including accounting for all facilities, and/or any modifications (including government facilities). Facility upgrades are at the discretion of the facility owner. The government is open to discussion.

Verbal Questions and Answers

Q6. Why aren't maneuverability and agility listed as objectives of the BAA? Particularly since high speed maneuverability of rotorcraft is generally only mediocre.
A6. It is desired that Phase I includes weighing the marginal cost of technologies against the system benefits. While improvements to maneuverability or agility are desired, it is not clear whether they outweigh the costs. What must also be considered, though, is that adaptation also enables a system to meet existing, challenging criteria only

when required, resulting in increased design freedom at other times and conditions. Specifically, can adaptation reduce the impact of intermittent performance criteria like maneuverability on the other performance attributes? Design decisions are based upon marginal costs and benefits. An important element of Phase I is to understand the benefits that accrue from the ability of adaptation to decouple design criteria, and use this to define the MAR objective rotor system and define the benefits.

Q7. Will there be a specific design mission?
A7. As part of the Industry Day charts, details on two reference missions are provided. Proposers are also invited to use their own reference missions. All of the values (e.g. range, payload, pressure altitude, etc) should be considered to be thresholds for a new-design, current state-of-the-art rotorcraft with a fixed geometry. The government is then interested to see what the delta improvement is between this new-design rotorcraft vs a new-design rotorcraft at the same technology level except for the rotor, which would be a MAR rotor.

Q8. Is there going to be a call for white papers for this BAA?
A8. No.

Q9. What if there is a conflict between a service Security Classification Guide and the DARPA SCG for this BAA?
A9. The Proposer should use the most restrictive, but should take a sensible approach; if there are questions, the Proposer should contact DARPA/SID.

Q10. What if the effort starts as Secret and then needs to be upgraded to Top Secret.
A10. DARPA will issue a revised DD254.

Q11. What is the total period of performance through Phase III?
A11. It is left to the Proposer to propose the best time phasing to achieve the program objectives. The key objective for the program, however, is to flight test the MAR rotor such that it reduces risk for the next generation DOD rotorcraft.

Q12. How many awards will be made in Phase I?
A12. DARPA reserves the right to select some, none or all of the proposals submitted, as well as to award only portions of a proposal. There is no pre-determined number. The selection will be made on the quality of the awards and the funding available.

Q13. The Industry Day slides showed Phase I as being 12 months long. Is that a hard deadline?
A13. That is a notional timeline. We currently envision a 12 month Phase I, but are interested in feedback. It is also desired that if multiple awards are made, they end at approximately the same time in order to secure funding for potential follow-on phase(s).

Q14. Is rotor rpm variation considered to be MAR technology or state-of-the-art?
A14. Rotor speed variation is one of many candidate approaches for adaptation. Some rotor speed variation capabilities have been demonstrated to various levels of maturity,

but the capability for infinite variation of rotor speed is not yet fully mature and therefore still exhibits some level of risk. No single statement can be made about the maturity of this broad class of technology. For the MAR effort, DARPA seeks high risk approaches to rotor adaptation – to include combinations of individual approaches – that yield dramatic improvement over what is available today for a new military rotorcraft development effort.