

## **Q&A input for MDO Suitability and Holistic Survivability**

**PEO AVN Industry Day discussion panels – 12 Feb 2020**

**Question: There did not appear to be any mention of MDSS in the roadmap or PM FW efforts. Is that effort being integrated by another Army organization?**

Answer: COL DeBoer – The plan for integration is still in development.

**Question: How do you define the difference between MDO Capable in 2028 versus MDO ready in 2035? Capable vs. Ready?**

Answer: LTC Kukla – If the capability doesn't exist today, then it will not likely be ready to be in the increment 1 of MDO Capable. All of the new solutions will require more testing to confirm operational capabilities – especially in the areas of AI and autonomy. The complexity of the new solutions will be resolved during integration into the weapon systems. MDO Ready will apply to those technologies that are ready for mass production and integrated into the airframes at that time.

**Question: Please explain where and how ISR capabilities are integrated/procured in legacy rotary wing, UAS, and FVL platforms and FW special mission aircraft.**

Answer: COL Anderson – The Gray Eagle platform has been prioritized for upgrades in this area of capability. In general, payload capabilities are from IEWS and do cover multiple platforms. Block 3 enhancements for Shadow are funded by IEWS.

**Question: Regarding readiness, can you speak to the role/limitations that the existing fleet obsolescence solutions plays in your strategy. What are your higher priority obsolescence issues?**

Answer: COL Sheppard – we are always looking for ways to help us deal with these matters better. In general, we need more lead time given to deal with any obsolescence issue – well more than a year if possible. We need to have constant communication from industry on these things to help deal with both the domestic capabilities along with the complexity of 16 partner nations.

COL Kuykendall affirmed the need for industry to do their part in early and often notification of pending obsolescence issues.

**Question: What additional qualification requirements are anticipated with ALE as opposed to existing UAS platforms due to the ALE interfacing directly with manned airframes?**

Answer: COL Anderson – The first two platforms designated to integrate with ALE capabilities are Gray Eagle (GE) and Apache. As expected, these are two different scenarios with both integration and crew interactions. Gray Eagle greatly benefits from integrated ALE as it greatly increases GE operational reach. The two more difficult issues to address will be launching and how best to engage with distributed control. There will be more to follow how best to engage the overall ALE capability with the AH pilots.

LTC Kukla – one of the key requirements will be to achieve the same common interface whether operators are in the air or on land. The goal is to use open systems approach where possible to assist in having this consistent interface for operation and use.

**Question: Interested in providing Armor, specifically Transparent Armor. Who are the contacts?**

Answer: COL Phillips – PM Aircraft Survivability Equipment (ASE) is the key PM that manages that technology and its applications.

**Question: COL Best's Requirements Development Priorities chart includes MOSA. Everything else is either a platform or a capability. 1. What is MOSA considered/is it viewed as a capability? 2. How will MOSA be tested/verified?**

Answer: LTC Kukla – Yes, MOSA – Modular Open Systems Approach – is a capability that facilitates the necessary specifications to enable the rapid change/update to equipment with minimal disruption to the overall weapon system. As threats and technology advances, MOSA architectures will allow for more seamless updates that bring the revised solutions to the field more quickly and efficiently. We believe that MOSA will have a corresponding architecture verification environment, similar to a CABAIL asset that will allow for compliance testing of a device or end application. The final verification environment is continuing to evolve.

**Question: How do see Aircraft Survivability Equipment (ASE) implemented in Multi-Domain Operations?**

Answer: MAJ Lamar - ASE suites will need to provide a fully layered approach, allowing for the detection of Infrared (IR) and Radiofrequency (RF) threats while delivering the appropriate countermeasure to defeat the threat. Over the past several years, our main focus has been the counter insurgency (COIN) fight addressing the IR MANPAD threat. As we prepare for future combat operations we are shifting our focus to modernize our Radar threat detection while

developing an electronic countermeasure capability to address the complex Integrated Air Defense Systems (IADS) of our near peer advisories.

**Question: We understand PM FLRAA has a holistic survivability requirement, how is that defined and what does that really mean?**

Answer: COL Phillips - This is a fantastic question, thank you. FLRAA does have a holistic survivability requirement in the current draft abbreviated Capability Development Document. There is a significant amount of effort ongoing within the Government to define specifically what's included in that holistic survivability requirement. In short, the holistic survivability requirement is an equation used to determine a numerical value to assess the weapon system's survivability. That equation includes several individual survivability characteristics and the probability of survival within each of those characteristics. The Robert Ball Aircraft Combat Survivability, Analysis and Design Handbook is the basis for this holistic survivability calculation. The objective is to ensure our weapon system meets the challenging survivability requirements within an MDO environment and provides industry flexibility in how the design will specifically meet an overall system survivability metric. Since this metric is new, it's important to seek industry feedback. We've engaged our JMR-TD vendors via the additional tasks they're working for FLRAA and this is a task for the eventual CD&RR vendors. Additionally, feedback from industry on our RFI's helps inform us on technology readiness to tackle this challenging problem set. Continued industry engagement via the JMR-TD additional tasks, CD&RR, and future RFI's is critical to ensure this requirement is adequately defined, technology readiness assessed and an incremental strategy of solving the problem defined.

**Question: Does the AH-64 have a role in Multi-Domain Operations?**

Answer: COL Sheppard - Absolutely, the AH-64E will be the Army's Attack Helicopter well beyond 2050. Commanders will fight their aviation platforms following the tenets of MDO, utilizing the capabilities of each platform. Combined with reconnaissance from the Army's future recon airframe, FARA, Manned Unmanned Teaming with UAS vehicles, and other Joint assets – the Apache will integrate into the MDO battlefield conducting Compete, Penetrate, Dis-integrate, Exploit, and Re-Compete role with cross-domain capabilities in the close and deep maneuver areas.

**Question: What will maintenance and sustainment be like for the future vertical lift aircraft, FARA and FLRAA?**

Answer: LTC Kukla - In the Joint All Domain Operations (JADO) concept, our fleet must be easily sustainable in the field in order to maintain OPTEMPO. We consider this "maintenance free operating periods" where FARA and FLRAA can operate for weeks at a time, when the most is demanded from them. We are currently working to achieve this, to reduce intermediate and

depot level maintenance actions and support, such as reduce requirement of phase maintenance inspections. Basically we want to reduce our maintenance and supply chain footprint as we fight JADO. Through various studies with academia and industry's ongoing advancements in technology, tooling, manufacturing, etc., we believe this will be possible with the future fleet.