Q&A input for Interoperability and Increased Air Crew Effectiveness

PEO AVN Industry Day discussion panels – 12 Feb 2020

Question: Has CDID considered weather in the cockpit to enhance situational awareness for future platforms?

Answer: Yes. The ADS-B In functions (weather & traffic) are programed to be displayed on the Nett-Warrior - Aviation tablet via the GMR/401 IDM (ultimately the Aviation Mission Computing Server (AMCS)) on the enduring fleet. We also anticipate this feature being included on future platforms.

Question: Artificial Intelligence (AI). Based on the amount of data that will be available, the complexity of our future systems, the high speed low altitude flight, and the requirement for FARA and FLRAA to be optionally piloted – it is obvious that AI will play a large role in the future fight. What is FVL CFT doing now to start laying the ground work for AI in the future?

Answer: LTC Kukla - FVL CFT and Army Futures Command (AFC) are tied in with the AI Task Force and presented them with several problem sets by which we received multiple whitepapers from different academic institutions. In conjunction with USAACE and our S&T SMEs we reviewed those papers and provided an Order of Merit List (OML) back to the AI TF. Additionally, we are working with the US Army Aviation Research Lab (USAARL) on Human System Integration (HSI) and cognitive offloading. However, AI is not a solution unique to the FVL CFT. AI is a solution that needs to be addressed by everyone. We need Data Scientists to write the algorithms. We need to provide an environment for the system to train and learn and improve. Eventually there is testing and validation, which requires input from the test community on what is acceptable. Simply put, this is a larger issue than just a CFT or AFC.

Question: Is AGPU 1.1 only for Chinook?

Answer: AGPU 1.1, as envisioned, will be capable of supporting all enduring Army Aviation fleet of rotary wing aircraft. However, the strategy is to initially procure and field to CH-47 units first to meet a capability gap in the current AGPU.

Question: COL Lane, has Utility benefited from MOSA as an enabler of rapid capability insertion and what challenges do you foresee when trying to take advantage of MOSA efforts?

Answer: COL Lane - Benefits of MOSA have already come to fruition for Utility, specifically with the UH-60V and CMS, allowing software and hardware changes with limited integration and re-qualification necessary. A primary challenge going forward is the need for certification/qualification evidence to compliment a modular approach and contractors providing the substantiation/data needed to ensure the air worthiness qualification aspect happens quickly. For any future solutions, providing box level qualification data and software substantiation to the appropriate DAL level will enable rapid fielding and allow Utility to realize the benefits of MOSA.

Question: Who is the Combat Aviation Brigade CRADA contact? My company has products that would qualify.

Answer: The APEO G5, Futures would be your initial entry point for discussions of how to introduce your capabilities for evaluation by one of the PEO Aviation platforms.

Question: COL Gengler - How will Army Aviation integrate into the future mission command structure?

Answer: COL Gengler - In an effort to better share and collaborate critical mission data within all computing environments (Command post, mounted, and mobile hand held) the Mission Command COE has embarked on an aggressive path to achieve operational converge. Operational convergence is defined as user (soldier) functions provided as applications on common hardware & software foundations, which allow the seamless and timely sharing of information across functions, echelons, formations, mission partners and locations. This level of convergence and shared situational understanding within aviation command posts and cockpits will require a significant upgrade to our current mission command systems, most notably with the aviation mission planning system (AMPS) and the Tactical Airspace Integration System (TAIS). Both of these aviation specific functions will ultimately become applications within the common operating environment (COE) that will natively operate within a shared network for rapid sharing of mission command data, enabling timely decision making.

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

Answer: COL Gengler – There are a few key requirements that are priorities for MDO 2028. Increased A-PNT capability is required. Updated communication gear to ensure seamless links with our ground forces is required. Sufficient Aircraft Survivability Equipment (ASE) to increase survivability is required. We recognize that these capabilities will not cover the entire enduring fleet in 2028. Leadership is working to define the minimum set of assets to be the target for modernization. Biggest difference in 2035 is that the aviation force will contain modernized

new platforms as a part of the fighting forces. MDO Capable will be a subset of the CAB assets - MDO Ready has a target of all capabilities for all platforms.

Question: What is the plan for a helmet mounted display in the cockpit? Any studies on required FOV?

Answer: LTC Kukla – The requirement for this application is still evolving – pilots are generally drowning in data, starved for information.

COL Gengler – In the past, NV googles have been a partial answer in the past. However, what is next remains in development. Part of the issue is not just the visualization, but the information system that is behind the screen. There is a question that remains – should this helmet mounted source include other sensory inputs to further enhance pilot SA? ACMs continue to look at the broader set of requirements.

Question: How/who/when will mission systems acquisition decisions be made for FARA and other platforms? How best for Industry to ensure decision makers have awareness of available/emerging systems?

Answer: COL Frasier – One of the keys in driving consistency in both the enduring and future fleets is remove the silos that exist between the platforms and focus on combined arms fight. PEO C3T and their TCM own the requirements for comms on the battlefield. PM AMSA partners with C3T and with COL Gengler and the Aviation Enablers Requirements Determination Directorate (RDD) to ensure that requirements are clear and that the materiel solutions satisfy those requirements. We are also internally driving decisions through the Architecture Working Groups who are helping us drive change. We continue to welcome input from industry on ways to optimize our architectures toward consistency and lower life cycle costs where possible.

Question: Re: FARA mission systems requirements. Other than the FARA BAA, what/when will other capabilities and requirements documents be released defining mission systems requirements for FARA?

Answer: COL Fortier – The remaining CP effort will inform the FARA EMD configuration. Draft CDDs are in process. Current schedule has 1st flight in FY23.

Question: COL Niles - How are you positioning your platform to meet the anticipated increase in the speed of changes in interoperability requirements in the MDO environment?

Answer: COL Niles - We are embracing the concepts of Open Systems Architecture to enable rapid reaction to changes in interoperability requirements. We've implemented some generic

video feed capabilities in our latest version of CAAS software that will allow us to port video from external software applications directly into the Cockpit MFD's without a need to update the CAAS integration. We're anticipating receiving this video feed from applications that could be hosted on the AMCS. We are also working with PM AMSA to look for ways to improve our comms architecture so that we can employ common solutions with minimal software integration work. We think that the AGNR program may provide a basis to accomplish this.

Question: How will the Army's investment in Aviation Mission Common Server (AMCS) change the way industry supports Army Aviation in the future?

Answer 4: COL Frasier - As our enemy adapts to our tactics, techniques, and procedures, and evolves their technologies to counter and attempt to defeat our own, the need for our own rapid evolution of technology and capability insertion is paramount. We need a modular, cost effective, scalable, adaptable common foundation in our platforms, to rapidly deploy cutting edge communications, computations, and data exploitations into our aircraft platforms.

The AMCS is the enduring fleet's transition from single purpose architecture of specificity, into a rapidly adaptable and powerful framework of HW and SW modules and components. The AMCS is the Army's enduring digital backplane that will exploit current and future sensors and data in a unified way to be rapidly adapted into new capabilities. It will provide a framework for sensor vendors, hardware vendors, and software vendors to rapidly develop and deploy new capabilities. From artificial intelligence, machine learning, data mining, alternate navigation, positioning and timing, health and status, survivability, platform and subsystem performance, cognitive decision aids, the AMCS will bring and provide to Army Aviation the development tool kits and on-platform hosting that the whole world and commercial industry has been enjoying akin to the introduction of the first smart phone.

Question: what advancements in Utility Helicopters Pilot Workload reductions would you like to see in the next 10-15 years?

Answer: COL Lane - Systems that exploit the environment and enhance pilotage of the aircraft in different meteorological and environmental conditions, would significantly reduce pilot workload and aid in allowing US Army aviation to be able to pick when we want to fight. Landings, takeoffs and flights in weather cause close crew coordination throughout the full flight, taking pilot workload to very high levels. Black Hawk is unique in Army Aviation because our MEDEVAC aircraft fleet, will often launch on a 9-line call on the spur of the moment and in all kinds of weather. Systems that can help the crew "see" through all types of weather would significantly reduce pilot workload, allow the crew to optimize their flight path and get to the patient in the minimum amount of time. COL Frasier from PM AMSA has performed a limited fielding on our HH-60M aircraft of a brownout sensor system that he has developed to provide

situational awareness in brownout takeoffs and landings. Future systems should focus on miniaturization and should be effective in all types of weather obscuration effects. Sensor systems that are the size of my fist should be the goal. Since we are a fielded platform, any addition of a new system to our aircraft is extra weight that we have to carry, which displaces cargo or personnel weight that we would have been able to carry without the new system installed. New sensor systems should be smaller, lighter weight and use less power than current systems. They should also be designed with the accuracies, reliabilities and testing necessary for pilotage of the aircraft, not just situational awareness, and if they were, then they would significantly reduce pilot workload.

Question: How do you see the CH-47 evolving under MDO operations?

Answer: COL Niles - We believe that the aircraft will continue to be upgraded, regardless of the Block II decision, because the Block I will be a major contributor to the MDO capable force. We always have the option of installing many of the Block II modifications, but we will also focus on CAB interoperability and capability enhancements, such as improved radios and other situational awareness upgrades. (Increased Aircrew Effectiveness, Expand Autonomous Capabilities/Developing Approach to X – Autonomous Tactical Landing/Expanding ARINC-661 implementation for 3rd party application integration)

Question: Is there any cooperation of hand-off between CABAIL and PIF?

Answer: Yes, there is. Specifically, if/when the resultant capability demonstrates exceptional promise and there is strong support from the Warfighters who have exercised it in CABAIL. The next logical step is to package it for installation on aircraft, which is the mission of the PIF. Once installed, the Warfighter can continue to exercise it and further develop TTPs for employment. If the capability proves to be significant, we can energize the PIF to build a LRIP amount of systems.

Question: If I wasn't able to schedule a one on one with PEO Aviation contacts, can I have their direct contact info so I can brief them when their schedule permits?

Answer: Industry and Academia should have direct communications with the AVN PMs using your normal business development channels.