HQMC / Aviation
Industry Day Notes
30 Nov 2007

Welcome and opening comments

- **Col Martinez, APW**, opened Industry Day with welcoming remarks to attendees. Administrative remarks were completed and HQMC / Aviation website (http://hqinet001.hqmc.usmc.mil/AVN) provided for follow-on information.

- **LtGen Trautman, Deputy Commandant for Aviation (DCA)**, was introduced by Col Martinez and provided opening remarks to include:

    - Desire for future and continued dialog and dynamic interaction with industry
    - Increasing the size of the Marine Corps to include aviation
    - Transitioning to new type/model/series of aircraft
    - Crossing the "digital divide" within the Command, Control, Communications, Computer and Intelligence (C4I) world requires more coherence to interoperability with huge potential
    - Currently crossing the "digital divide" in little boats and are not reaping full benefits
    - Synopsis of recent Iraq trip to include visit with VMU-1 who are employing both SHADOW and SCAN EAGLE to pass information digitally
    - Discussed the "explosion" of battle space connectivity
    - Industries ability to contribute and provide coherence to Aviation's "way ahead"
    - The need for open architecture interoperability
    - USMC shunning the proprietary path industry now adheres to

- LtGen Trautman reviewed Aviation's "Vision Statement" with the audience:

    A networked-enabled and digitally-interoperable expeditionary aviation combat element postured to execute responsive, persistent, lethal, and adaptive full-spectrum operations as directed by the MAGTF or Joint Force Commander

- Following a discussion of the Vision Statement, LtGen Trautman opened the floor to questions and provided several answers:

    - What is the goal at the end of the day? No defined end-state, except for a desire for follow-on communications and interaction between aviation and industry, but the day should let industry know what is and is not Marine Aviation's interests, and should facilitate less wasted time and more productive discourse..
    - How should the Aviation Combat Element (ACE) be connected with the Ground Combat Element (GCE)? Seamlessly and integrated is the key to supporting the MAGTF or Joint Force Commander (JFC) with aviation building a better bridge between the ACE and GCE so MAGTF C2 can follow. The USMC is crossing the "digital divide" better than any other service, and our vision of the "Strategic Corporal" embodies our focus.
    - Northrop-Grumman Corp: Can industry help now with current programs to get to the goal? Yes. Aviation needs industry's ideas to achieve its goal. Communications is the start.

We need to share this vision and ideas. We are doing well because of this partnership, and we need to continue to partnership to realize our shared vision.

- How does the Naval Aviation Plan 2030 affect Marine Corps aviation? "Naval" Aviation Plan is really "Navy" Aviation Plan, which is separate from the 2007 Marine Corps Aviation Plan. There is a Naval Aviation Strategic document the Marine Corps is included in and the document is due out in January 2008.
- ITT: The JCIDS process, is it broke? JCIDS is an issue and changes could streamline the process. But changes are not an individual service issue and would require DOD action. The USMC needs to continue to get better at this process, but it does not facilitate rapid fielding of emerging capabilities required by the "Strategic Corporal."
- Anthony Mara: Small businesses could have issues with "open architecture" versus "proprietary." Is that concern? Yes, it is a big concern, but aviation wants small businesses coming to the table with their ideas and would encourage both small businesses and larger corporations developing ways to "come together" to support programs. We need to develop different contracts/programatics to facilitate this cooperation.
- What is the biggest obstacle aviation's has? Resource limitations. Big programs are sucking up lots of money, which leave little room for innovation. Living off supplementals is coming to an end and this needs to transition to an increased baseline. Good chance for this, but…

- Col Martinez next reviewed the day's schedule:

  - Part I, How We Fight
  - Part II, Future Connectivity and Interoperability
  - Part III, USMC UAS Concepts
  - Part IV, Concept Vignette

and end game:

- Articulate aviation's vision statement
- Foster relationships between aviation and industry
- Open dialog
- Provide opportunities

Part I: How We Fight

- **Col Ames, APC**, facilitated Part I which provided information on how the Marine Corps fights as a MAGTF. A video, Enabling the Strategic Corporal, was shown emphasizing how the MAGTF is employed across the spectrum of warfare and the need for the "Strategic Corporal" to have real-time information to maintain situational awareness in order to accomplish his missions of:

    - Assisting
    - Enforcing
    - Developing
    - Defeating

and the need to transition rapidly between missions by increasing the velocity of intelligence to action sequence. Additionally with the battle space always evolving the ACE has to lead the way.

- **LtCol Annibale, MCCDC G-3/5**, supported Part I by discussing the Marine Operating Concept and how the MAGTF fights at the tactical level with the ACE providing depth within the battle space.
    - Strategic Corporal → Strategic Imperative

- Following the presentation on How We Fight, the floor was opened for questions:

    - What information does the Strategic Corporal need? Information that mitigates risk, builds situational awareness (SA) not only for one Strategic Corporal, but also the Strategic Corporal over the next hill or around the block, information that is real-time and accessible.

- **LtCol Ebert, APW**, was asked to provide a vignette example of this. LtCol Ebert discussed how the situational awareness (SA) of different units was needed by the Strategic Corporal to build his complete SA, the ability to request and receive information from multiple sources via a robust open architecture networks not normally available or in real-time. All of this would need to be accomplished via a small handheld device that would be easy to operate and not be encumbering. Critical is a robust network to access to information and capabilities ubiquitous.

- Following the presentation , the floor was opened for questions:

    - Is there still a need for volume of fires, sea-based fires, specifically rail gun? LtCol Annibale referenced an ongoing volume of fires study, and yes they are still important. The reality of precision fires has not negated the need for volume of fires. DC/A further clarified that the MAGTF currently has a fires gap, and aviation is researching UASs as an option to close this gap.

- **BGen Walsh, Assistant Deputy Commandant for Aviation (ACDA)**, provided additional comments on how industry can assist aviation in accomplishing what is laid out in the Aviation Vision Statement based on his personal observations and recapped Part I:

- USMC is relevant (reference our OPTEMPO) and modernizing (transitioning every platform)
- We have a vision, path is not defined, and we need industry help
- The CPL/LCPL come up with innovative ideas
- We are in a technology explosion
- USMC requires information dominance on the battlefield → total SA to the decision makers
- Aviation embraces technology and leverage to the benefit of the MAGTF/Joint Commander
- Requirement to be joint and interoperability
- Digital exchange
- Reduce cost
- Easy to use displays
- Information to the decision maker quicker
- Complete real-time SA before getting to the battle space
- Think outside the box, think asymmetrical
- Industry needs to take the concept and bring it to fruition
- The USMC ties the air and ground, and we will lead the Joint world and industry towards our vision

- LtGen Trautman clarified the Strategic Corporal concept as not an individual, but the application of fires across the battle space and the tools and connectivity to apply these fires. Likened it to the statement "Every Marine is a Rifleman."

Part II: Future Connectivity and Interoperability

- **LtCol Ebert, APW**, facilitated Part II regarding the need for the connectivity and interoperability of systems. LtCol Ebert explained how connectivity and interoperability will be effected by:

  - The environment where the playing field has been leveled because our adversaries have access to the same technology we do, the acquisition process is burdensome, economic challenges exist, and the MAGTF battle space is more complex
  - The threat spectrum is increasing and the need for the MAGTF to cover the entire spectrum
  - Data transfers across domains where C2 systems must keep pace with distributed operations, the challenges of stove piped systems/programs, increasing system complexity, where limited standardization regarding connectivity, networking, information sharing, and capability collaboration exists

Other discussion items included:

  - Reconsideration of traditional capability development mindset
    - Bigger systems are not necessarily the best solution
    - Unique system are not necessarily the best solution
  - Changing the paradigm

- Distribution of capabilities
- Access to decision makers
- Contribution of resources/information from all nodes

- How we will fight
  - Holistically with in the four domains: Air, Land, Sea, and Cyber/Network
  - Defined by who we are not by the equipment we have
  - Must be networked
- Future dependencies
  - Success on the battle space requires connectivity and interoperability within the MAGTF, other services, and coalition partners
- RF spectrum
  - Scarce commodity
  - Future needs must be protected and assessable
  - For EMW success spectrum must be dominated and enemy access prevented
- Future MAGTF
  - Must be network enabled
  - Focus on decision makers
  - Dependent on collaboration
  - Network nodes are capability provider and customer
- Decision makers perspective:
  - Good decisions while leading from appropriate level
  - SA at all times
  - Cannot neglect Command and Leadership
- Network growth from one-to-one exchanges to one-to-many
- Distribution of capabilities
  - Leverage network
  - Maximize effects on targets
  - Miniaturize payloads
  - New kinetic/non-kinetic capabilities
- Operational flexibility for the Joint Force
  - Aviation resources as a force integrator
  - Precision fires/precision ISR
  - Integrated platform architecture
- Distributed operations for flexibility
- Procurement for future systems will include requirements specifying:
  - Open Architectures and when possible, open source
  - Reusability, extensibility, scalability
  - Modular solutions are great providing they have
    - Standardized hardware and software interfaces
    - Plug and play
  - Software re-programmability
    - Open source development resources (SDKs)
    - Government owned and managed intellectual property (IP)
  - Standards based
    - IPv6 is good
    - Industry established norms, a la WiFi – the industry compatibility consortium to enable 802.11 success
    - Protocol agreement for modularity within the OSI stack

- Desired end state for aviation is to migrate to a fully networked, distributed and democratized environment where capabilities and information are available to any node at any time; where an enabled network built on an open architecture is robust, scalable, flexible, and modular requiring effortless integration; and where machine-to-machine exchanges occur because software is reprogrammable.

- A question was asked by Northrop-Grumman Corporation: Can you clarify what is meant by scaleable? Scalable implies that an architecture or system can be scaled to fit in a network of any size. For hardware applications, this implies that the devise/system can be used in multiple configurations, such as in a pod for TacAir, on a pallet for Assault Support, or in a payload for UAS.

- **Col Monti, Joint Systems Integration Command**, was asked by LtGen Trautman to provide the JSIC perspective on the integration of joint systems:

    - Enterprise Service Architecture
    - Breakdown proprietary walls
    - Small business needs to innovate and money is available for this innovation
    - Fast and changing enterprise and democratic environment to satisfy the interoperability and digitally connected requirement for the MAGTF/Joint Commander enabling the Strategic Corporal to win on the future battlefield

- Some questions were asked:

    - Can you explain open architecture? An open architecture is one that is not limited in the ability to interconnect, and whose specifications are made widely available to allow third parties to develop add-on peripherals for it. Any system that requires extensive integration software/hardware that must be accomplished by a particular vendor is in essence a closed architecture.
        - Open architecture is a type of architecture that allows adding, upgrading and swapping components. For example, the IBM PC has an open architecture, whereas the Amiga 500 home computer had a closed architecture, where the hardware manufacturer chooses the components, and they are not generally upgradeable.
        - Open architecture allows potential users to see inside all or parts of the architecture without any proprietary constraints. Typically, an open architecture publishes all or parts of its architecture that the developer or integrator wants to share. The open business processes involved with an open architecture may require some license agreements between entities sharing the architecture information.

    - **NRL** was asked to comment on the how the Joint Unmanned Autonomous System (JUAS) fits into this open architecture. JUAS represents an open and expandable system with the ability to add message sets as requirements/capabilities allow. NRL also emphasized making it XML so it is expandable and human readable. I/Os need to be truly open and this means focus beyond the mission.

- Northrop-Grumman Corporation: How can we help create an invitation at layer 3 of the OSI model? This is where the breakdown happens, but it doesn't have to!
- SRA: Is StrikeLink (A) the path the USMC is taking? **Maj Huber** answered this question: StrikeLink (A) is a medium to get Digital CAS Interoperability via Variable Message Format (VMF), it is an interoperability solver.

- A note was made by industry that MARCORSYSCOM needs to be in attendance.

Part III: USMC UAS Concepts

- **LtCol Kerr, APW**, facilitated Part III. Marine Corps UASs are viewed as a Family of Systems and a bridge between the ACE and GCE as aviation assets are pushed further down to support commanders. There are currently three tiers of UAS systems within the Marine Corps. Tier I systems are characterized as man-portable/hand launched systems residing at the infantry company/battalion level. Tier II and III systems reside within Marine air wings. Each tier is defined by size, weight, power limits, and standard interfaces. Additional discussion items included:

  - Introducing plug-and-play payloads will enhance UAS capabilities
  - UAS challenges
    - Propitiatory/stovepipe C2 links
    - Digital divide/connectivity to supported unit
    - RF band congestion
    - Sensor data management and dissemination
  - UAS control link architecture
  - Future UAS concepts of operation will require networked-enabled C2

- Following the presentation the floor was opened for questions:

  - Is bandwidth a problem? Yes, but networked-enabled solves the problem.
  - Information security and classification of data an issue?
  - Standardized C2 interface, who has the lead? OSD UAS Standardization Task Force recently stood up to lead. All the services are involved. Need industry involvement as well.
  - Is airspace an issue? Yes. Because of changing FAA rules and regulations, even when utilizing procedural and positive control which the Marine Corps does a good job of , it is challenging.

- Desired end state aviation regarding UASs:

  - Standardized C2 interface
  - Scalable
  - Open architecture/reprogrammable software
  - Reduction of RF bandwidth congestion
  - Sensor data management/dissemination
  - Plug-and-play payloads

Part IV: Vignette

- **LtCol Fries, APW**, supported by **LtCol Fuerst, APW, LtCol Kerr, APW**, and **LtCol O'Harra, APC**, facilitated Part IV. Part IV was designed around an F-35 scenario where the capabilities of the F-35 were presented in the execution of a NEO operation supporting Marines on the ground, V-22s and UASs. The scenario stressed the open architecture of required by the F-35.

- Following the presentation the floor was opened for questions:

    - What is aviation's vision for MALS in 2015? ASL answered. Developing what that will be. LtGen Trautman added that the aviation logistics supply system is good now and very responsive.
    - Is there a joint vision on the tactical use of SATCOM? APC answered. The MAGTF C2 Working Group is further defining the requirement. Col Monti added that DISA will be determining SATCOM usage and managing the limited bandwidth, and that the military needs to better define its requirement.
    - EA aircraft? APW answered. CORPORAL is the answer while also investing in multi-role aircraft, plug-and-play capabilities, and improvements in EW boxes/sensors. The Marine Corps also needs to be able to integrate and link Radio Battalion's assets with F-35 and UAS links to make a MAGTF EW capability vice separate GCE and ACE capabilities.

Wrap up and closing comments

- Col Martinez thanked industry attendees for coming and asked if the end game objectives were met:

    - Articulate aviation's vision statement? 50/50 response
    - Foster relationships between aviation and industry? Yes
    - Open dialog with industry relating to aviation's vision? Yes
    - Provide opportunities for industry to apply R&D efforts to meet aviation's vision?

- LtGen Trautman provided closing comments emphasizing Aviation's Vision Statement:

    A networked-enabled and digitally-interoperable expeditionary aviation combat element postured to execute responsive, persistent, lethal, and adaptive full-spectrum operations as directed by the MAGTF or Joint Force Commander