

# *Joint Air and Space Power Conference 2006*

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## *“How NATO uses Unmanned Air & Space Capabilities Today & Tomorrow – focus on C4ISTAR.”*

- three goals, set stage, the present & the future.
- unmanned ac are only one part in the overall system – keep perspective – if we’re looking through the soda straw perspective so remember the big picture.
- NATO nations can set standards that non-NATO can also follow.
- NATO operates on consensus that is an important quality.
- Development of UAV is following manned development.
- New dawn for UAVs – dropping cost of electronics, increasing computing, miniaturization, military need, communications.
- Since 2001 to 2011 – 10 fold increase in spending on UAVs.
- Growth in UAV manufacturing – 33% increase from 2002 to 2007.
- List of missions is expanding to long list – finding resources, multi-spectral imaging to find minerals.
- JAPCC initiatives on list of mission list – refer to slide. The fidelity of the sensor expands the mind of mission sets we haven’t figured out yet.
- Primary challenges are Airspace Management, C2, Interoperability, and Force Development.
- Problem with crowded airspace below 15,000 ft.
- See & avoid requirements, airworthiness requirements, communication requirements and psychological challenges of having UAS flying over our homes.
- UAS are not connected to our CAOCs and that needs to happen.
- Segregation can allow us more control of our assets but leads to inefficiency.
- Integration & interoperability must go to the core of our capabilities.
- They can do smart routing and use Internet protocols so that images can be delivered to the desk top.
- Standards are needed.
- TT&P are needed – who is writing them?
- Developing trained personnel over the long term. Whom are you going to hire in the future to develop the UAV architecture?
- What kind of people do we recruit for the UAV control?
- NATO UAS Activities – STANAGS are established, Joint Capability Groups exist for each element – air, maritime and land.
- We need to treat UAS like we treat manned aircraft. UAS & manned aircraft operating in a package together.
- JAPCC has developed a UAS flight plan to identify short falls and recommend solutions to shortfalls.
- We’re interested in the UAS flight plan being nestled into the C4ISR flight plan of the future.
- We must learn from our heritage and reach toward the horizon to deliver seamless UAS integration across the battle space.

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### **Q&A**

*Q – How far has US gone with the Cougar issue?*

A – Joint testing, concern about pirates taking advantage of our system output. Information assurance is challenging and we've not moved far enough. It's difficult to confirm who's receiving the UAS output.

*Q – We should not be focused solely on the future, we have real problems today to deal with.*

A. – The UAS flight plan is one small part of the integration & interoperability discussion. We don't know what each nation has in terms of capability. Each nation brings capabilities to the fight with different standards that presents challenges. The flight plan helps us understand the areas where we need to focus effort – It allows us to anticipate the sharing of information in terms of standards. The flight plan gives us the context in which we operate.

*Q – Space issue. We need to give industry an idea of a strategy. What can we launch into space?*

A. – I do not have a good idea of space resources within NATO. Looking forward to C4ISR roadmap to get handle on that. Understanding the ground view as well, when will launches take place?

Consider an air-bridge between our current capabilities and the satellite capability to come. High altitude vehicle that apportions the bandwidth to the users. Laser technology and wideband data link capability. Lots of discussion on Link-16.

*Q – Do we really understand the requirements of the operator well enough to have one man operating multiple UAS resources?*

A – Human systems engineering is a growing field of study. Visual and audio is being combined with text to help the operator manage but this field needs more research. Process improvement is needed and more effort is needed to understand the operator capacity.

*Q – Are we able to solve problems on the ground from above 15,000ft?*

A – The 15,000ft problem is a hangover issue from Kosovo where aircraft had to stay above 20,000ft. The UAS is part of a larger system and the ground component FAC (Forward Air Controller) is important to that capability. Analysis occurs on the ground where there are multiple systems that feed the analyst.

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*Q – Flight plan is A to B then what? Is the flight plan useful to show what UAVs should not do and then we focus on the areas we have to focus?*

A – I spoke about history where we operated in stovepipes, so we can learn from that. Sure we can use the flight plan to focus on areas we shouldn't operate the UAV.

*Q – What could be done to incorporate the UAV into future exercise?*

A – We need to certify NRF forces. Creating a Centre of Joint Fire Excellence at Spangdalem – Tacevals are being developed to include the distributed air picture. UAVs need to be incorporated into the exercises (using the CJSOR) to contribute to the distributed air picture.

*Q – How can we protect ourselves against the UAS menace (a UAS being used against us)?*

A – We haven't seen it yet but we must be aware of that. Intelligence systems must be vigilant against these threats. We need advanced knowledge about these threats and air & space forces are equipped to deal with that. Cyberspace threats exist as well. We need to pay close attention to the threat in cyberspace. Information assurance is also important, to protect our own systems.

*Q – C2 wise how is intimacy between air & ground being developed for C2 of UAS?*

A – The training for Forward Air Controllers happens daily. We need to pay attention of the use of connectivity between satellite assets and the TACP piece (Tactical Air Control Party – Forward Air Controller). Dialogue exists between us and army so we can be seen as an interdependent team, getting them to write us into their concept of operation.