



Unmanned Aircraft Systems

January 9, 2009

Ed Wolski

Unmanned Warfare
OUSD(AT&L)



Overview

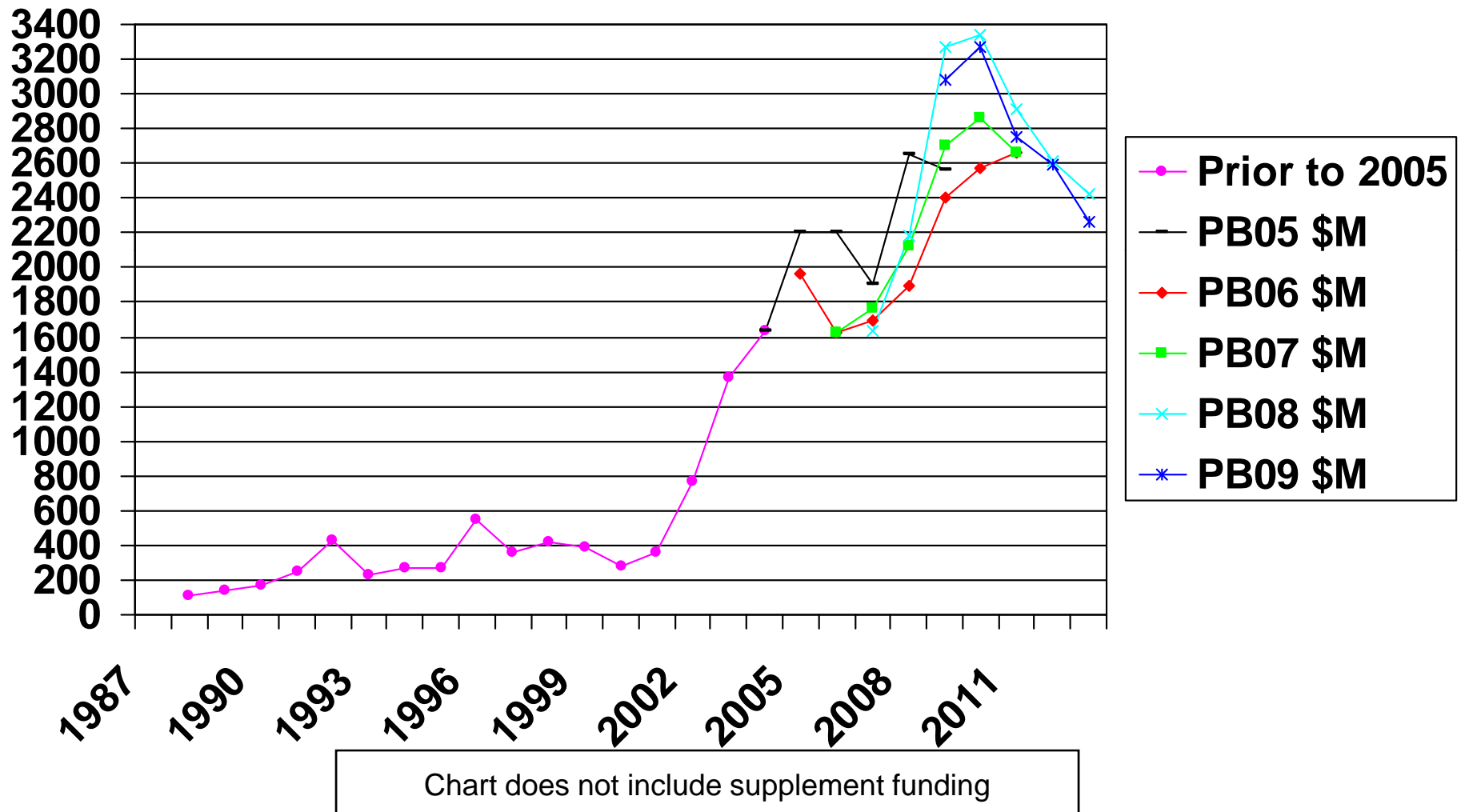
- **DoD UAS Overview**
- **Unmanned Aircraft Systems Task Force**
 - Common Ground Station
- **Operational Intelligence, Surveillance, and Reconnaissance Task Force**
- **Congressional Oversight / Direction**



DoD UAS Overview



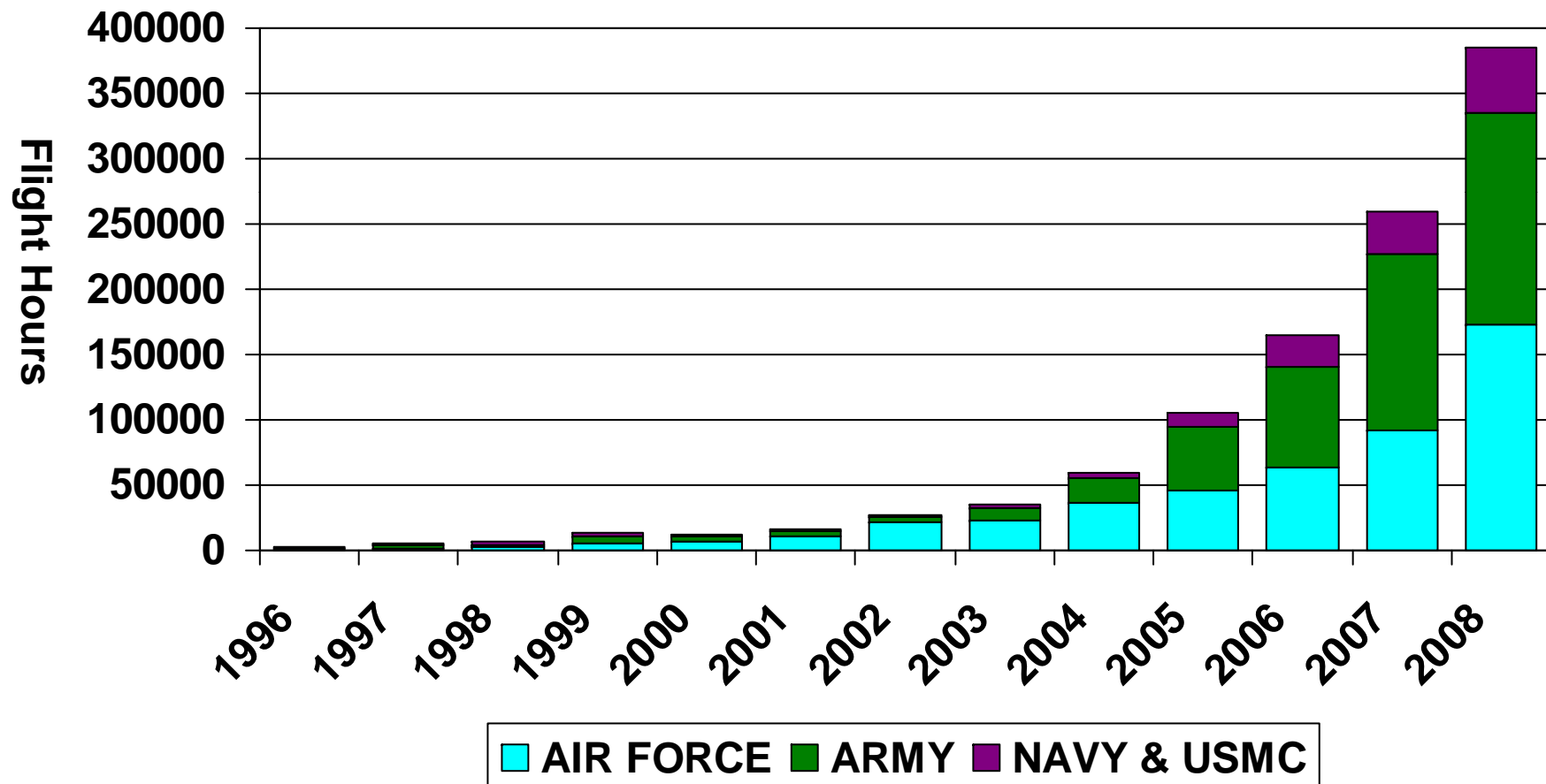
UAS Funding (RDT&E and Procurement)

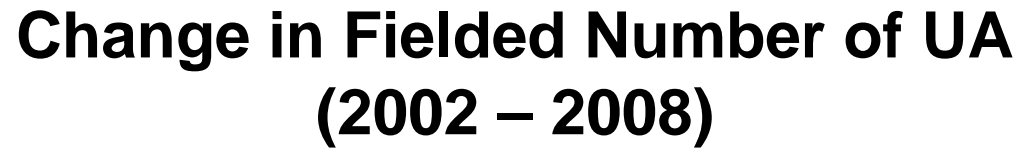




DoD UAS Flight Hours (By Department, By Fiscal Year)

Does not include man-portable Small UAS (e.g., Raven)

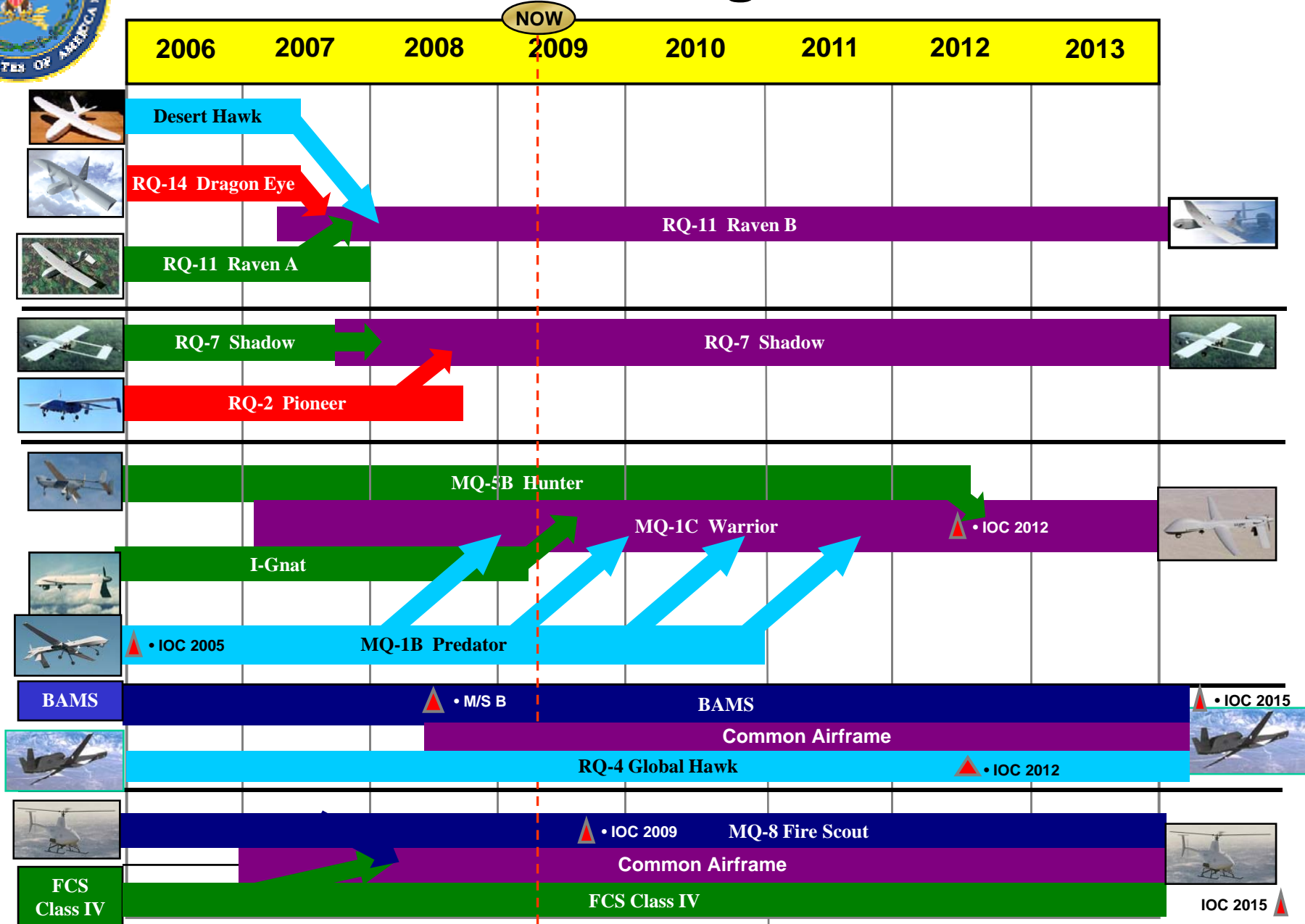




Note: Small unmanned aircraft systems (SUAS), those weighing less than 10 lbs, have been included. The greatest increase in numbers of aircraft is due to SUAS. SUAS are listed separately. Numbers listed are for aircraft, not systems. Systems are composed of varying numbers of aircraft.



DoD UAS Convergence Plan





Office of the Secretary of Defense *Unmanned Systems Roadmap, 2009-2035*





Office of the Secretary of Defense

Unmanned Systems Roadmap, 2009-2035

- Incorporates a vision and strategy for unmanned aircraft systems, unmanned ground vehicles, and unmanned maritime systems that is focused on delivery of warfighting capability.
- Overarching goal, in accordance with the Defense Planning Guidance, is to focus military departments and defense agencies toward investments in unmanned systems and technologies that meet the prioritized capability needs of the warfighter that include:
 1. **Reconnaissance and Surveillance.**
 2. **Target Identification and Designation.**
 3. **Counter-Mine and Explosive Ordnance Disposal.**
 4. **Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE) Reconnaissance.**



Office of the Secretary of Defense

Unmanned Systems Roadmap, 2009-2035

- **Goal 1.** Improve the effectiveness of COCOM and partner nations through improved integration and joint Military Services collaboration of unmanned systems.
- **Goal 2.** Support research and development activities to increase the level of automation in unmanned systems leading to appropriate levels of autonomy.
- **Goal 3.** Increase the transition of unmanned system technologies from research and development activities into the hands of the Warfighter.
- **Goal 4.** Achieve greater interoperability among system controls, communications, data products, data links, and payloads/mission equipment packages on unmanned systems.
- **Goal 5.** Foster the development and practice of policies, standards, and procedures that enable safe and effective operations between manned and unmanned systems.
- **Goal 6.** Implement standardized and protected positive control measures for unmanned systems and their associated armament.
- **Goal 7.** Ensure test capabilities support the fielding of unmanned systems that are effective, suitable, and survivable.
- **Goal 8.** Enhance the current logistical support process for unmanned systems.



UAS Task Force



Creation of the UAS Task Force



THE DEPUTY SECRETARY OF DEFENSE
WASHINGTON

September 13, 2007

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
COMMANDERS OF THE COMBATANT COMMANDS
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION

SUBJECT: Unmanned Aircraft Systems (UAS)

Pursuant to the discussions and agreement at the September 13, 2007, Deputy's Advisory Working Group, the following actions are hereby directed in lieu of establishing an executive agent for UAS:

- The Acting USD(AT&L) will convene a task force to coordinate critical UAS issues and to develop a way ahead that will enhance operations, enable interdependencies, and streamline acquisition of UAS. The task force will report regularly to the DAWG on findings and recommendations.
- The task force will identify to the DAWG and, where appropriate, assign lead organizations for issues related to acquisition and management of UAS, including interoperability, civil airspace integration, frequency spectrum and bandwidth utilization, and airframe payload and sensor management.
- The Joint Requirements Oversight Council will coordinate the development of UAS training activities and operational employment.
- The Predator and Sky Warrior programs will be combined into a single acquisition program, to include a common data link, in order to achieve common development, procurement, sustainment, and training activities. The Department will originate a single contract by October 2008.
- The Acting USMA(AT&L), in coordination with the Chairman of the Joint Chiefs of Staff, will develop interoperability profiles for incorporation into the Joint Capabilities Integration Development System.
- The Acting USD(AT&L) will evaluate and make recommendations leading to increased competition for UAS acquisition.

These actions will provide for common, joint, and operationally effective UAS programs.

OSD 14667-97
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THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

OCT 08 2007

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
UNDER SECRETARY OF DEFENSE FOR INTELLIGENCE
VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF
COMMANDER, U.S. JOINT FORCES COMMAND
ASSISTANT SECRETARY OF DEFENSE (NETWORKS
AND INFORMATION INTEGRATION)
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION

SUBJECT: Unmanned Aircraft Systems (UAS)

Pursuant to the DepSecDef September 13 memorandum, I direct the current Unmanned Aircraft Systems Planning Task Force and the Unmanned Aircraft Systems Joint Analysis Team (JAT) to combine and form a new task force: the Unmanned Aircraft Systems Task Force (UAS TF). This task force will lead a Department-wide effort to coordinate critical UAS issues and to develop a way ahead for UAS that will enhance operations, enable interdependencies, and streamline acquisition. Mr. Dyle Weatherington will lead the UAS TF and report - through me to the Deputy's Advisory Working Group (DAWG) - on the UAS TF's findings and recommendations.

I request you support the formation of a UAS Senior Steering Group (UAS SSG), as shown in Attachment 1. The UAS TF will advise the UAS SSG and coordinate significant issues with the UAS SSG prior to their presentations to the DAWG.

Additionally, I request you actively support the UAS TF's joint integrated product teams (IPTs), described in Attachment 2, and identify a single organizational point of contact for each IPT, and an O-6 (or equivalent) for the IPT(s) your organization will co-lead.

Please respond by October 8 to Mr. Weatherington at 703-695-6188 or dyle.weatherington@osd.mil. The goal is to achieve coordinated and integrated solutions that allow the DoD to gain maximum benefit from its UAS investment.

John Weatherington
Active

Attachments:
As stated

cc:
USD(C)
DUSD(A&T)
D.DRAE
OGC
ASD(HDASA)

UAS Task Force IPTs

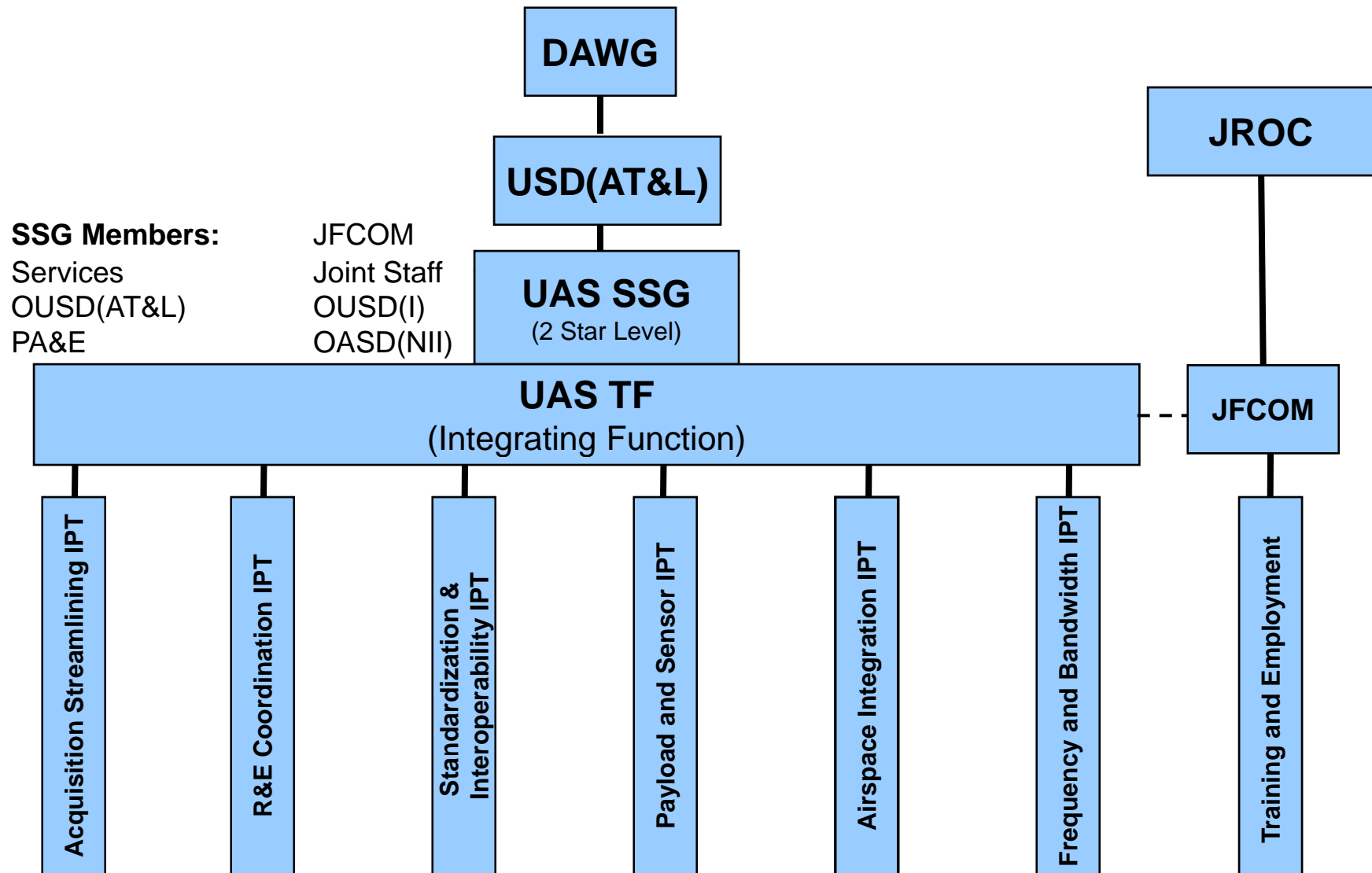
The UAS TF will lead and/or coordinate the following IPT actions:

- Acquisition streamlining evaluations for all DoD UAS programs**
 - Lead an IPT to assess and evaluate programs for acquisition streamlining options. Develop options to combine the Air Force Predator and Army Sky Warrior programs into a single Acquisition Category (ACAT) 1 program. Support a Defense Acquisition Board during the 3QFY08 to determine the program's organizational structure.
- UAS research and development coordination**
 - Co-lead with the Joint Staff an IPT to identify critical warfighter deficiencies with potential to be supported with UAS, and to link Science and Technology investment and Advanced/Joint Concept Technology Demonstration efforts to those deficiencies. Evaluate propulsion, networking, communications, and other critical UAS challenges for near-term technology insertion options.
- UAS standardization and interoperability improvements**
 - Co-lead with the Navy an IPT to develop interoperability standards profiles for incorporation into the Joint Capabilities Integration Development System. Profile to support a Predator/Sky Warrior ACAT 1 program should be available in 120 days.
- UAS civil airspace integration planning and technology development**
 - Co-lead with Air Force an IPT to review and assess operational requirements; identify acquisition solutions; and recommend training and policy changes necessary to fully integrate UAS into all necessary classes of airspace in support of DoD requirements. Immediate focus is to improve airspace access for UAS training requirements in support of the Global War on Terrorism (GWOT).
- UAS payload and sensor integration**
 - Co-lead with Army an IPT to review and assess operational requirements, identify potential joint acquisition solutions, and recommend integrated training and sustainment to optimize UAS payload and sensor development and fielding. Immediate focus is Predator and Sky Warrior data-links, and EO/IR and SIGINT payloads supporting the Global War on Terrorism (GWOT).

Attachment 2



UAS Task Force Management Structure





Current Status

- UAS Task Force is approaching the 1-year point
- Significant Accomplishments to date
 - **FY08 funding for Airspace Integration activities**
 - **Predator/Sky Warrior**
 - Common airframe contract
 - Common data link option
 - Significant progress on common EO/IR solution
 - **USIP 1 complete (FMV/LOS) <http://www.acq.osd.mil/uas/>**
 - **Frequency & Bandwidth Phase 1 Interim Report (LOS)**
- Recent events have pointed toward the need to focus on “re-energizing” the UAS Task Force
 - **GAO Report #351096**
 - **Independent Review Team Findings**
 - **QRM UAS/ISR Study**



USIP 1 Impact Assessment

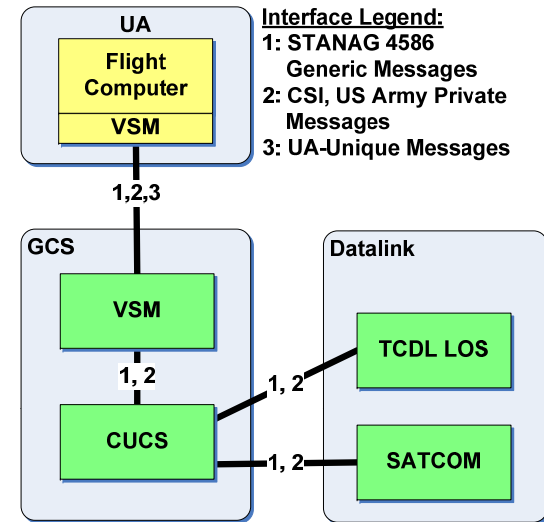
USIP 1							
Paragraph	Predator	ERMP	MQ-8B	MQ-9	BAMS	Shadow	STUAS
Applicability	N	N	N	N	N	N	N
IC 1: Transmission of Motion Video							
Paragraph	Predator	ERMP	MQ-8B	MQ-9	BAMS	Shadow	STUAS
2. Applicable Standards	N	N	N	N	N	N	N
3. Implementation Requirements	N	N	N	N	N	N	N
3.1 Imagery Definition and Compression	N	Mo	N	N	N	Mo	N
3.2 UDP/IP	N	Mo	N	N	N	Mo	N
3.3 Metadata for SA	N	N	Mo	N	N	N	N
3.4 Emerging Standards	N	N	N	N	N	N	N
4. Certification	N	N	N	N	Mi	N	N
IC 2: LOS Data Link							
Paragraph	Predator	ERMP	MQ-8B	MQ-9	BAMS	Shadow	STUAS
2. Applicable Standards	N	Mi	N	N	N	Mi	N
3. Implementation Convention Requirements	N	N	N	N	N	N	N
3.1 Requirements	N	N	N	N	Mi	N	Mo
3.2 Standards Trace	N	N	N	N	N	N	N
3.3 Emerging Standards	N	Mo	N	N	N	Mo	N
4. CERTIFICATION	N	N	N	N	Mi	N	N
Implementation	Initial	FY10	FY10 (IOC)	FY09 (IOC)	FY10	FY11	FY11 (IOC)
	50%	FY11			FY11	FY13	
	Complete	FY13			FY12	FY15	



Ground Segment Interface Development (FY09)

Tasking

“... in coordination with the OSD Unmanned Aircraft Systems Task Force, to develop a common Ground Segment interface standard that supports all system functions required between the Ground Segment and the aircraft and payloads.”



STATUS

- | | |
|--------------------------------------|-----------|
| • Develop Set of Assumptions | Complete |
| • JICWG#1 | Complete |
| • Service review of Army IOPs | Complete |
| • Initial Draft ICD release | 7 Jan 09 |
| • JICWG #2 (HSV) | 23 Jan 09 |
| • JICWG#3 | 22 Apr 09 |
| • Final Draft GSI ICD Release | 15 Jul 09 |
| • GSI Review @ JICWG#4 | 29 Jul 09 |
| • GSI Release for Signature/Staffing | 15 Aug 09 |
| • Full Release | 30 Sep 09 |

Key Assumptions

- Develop a Government owned open Interface Control Document (ICD) using STANAG 4586
- Focus Initial effort on Predator and Warrior, with intent for UAVs above 30 lbs.
- ICD is independent of VSM location
- Use USIP 1 and CDL IOP guidance for datalink waveform definition
- Use USIP 1 for FMV standardization
- GSI to address weapons, EO/IR, launch and recovery (LOI 5), SATCOM, SAR/MTI, SIGINT, and voice C2 messaging



Common Ground Control Station Architecture Development/Demonstration (FY10/11)

Description

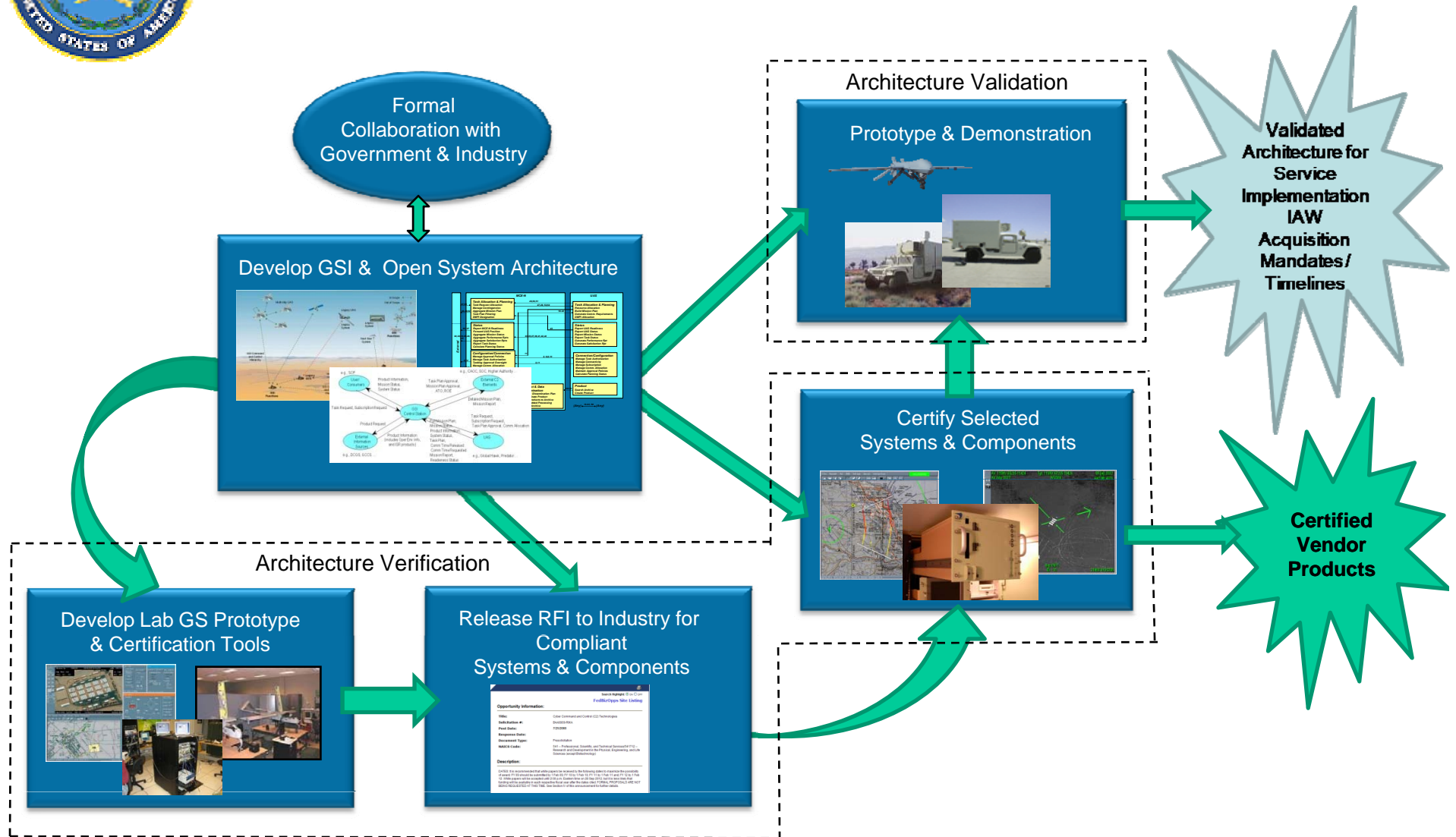
Develop and prototype an Unmanned Aircraft System (UAS) Common Ground Control Station (GCS) Open Systems Architecture (OSA) for implementation across DoD, facilitating increased competition for suppliers of UAS GCS components, applications, and systems

Products

- Government Owned Common UAS GCS OSA Standards
- UAS GCS OSA Certification Facility
- Certified Set of Vendor GCS Products
- Prototype OSA Compliant GCS (*Validated via flight Demonstration*)

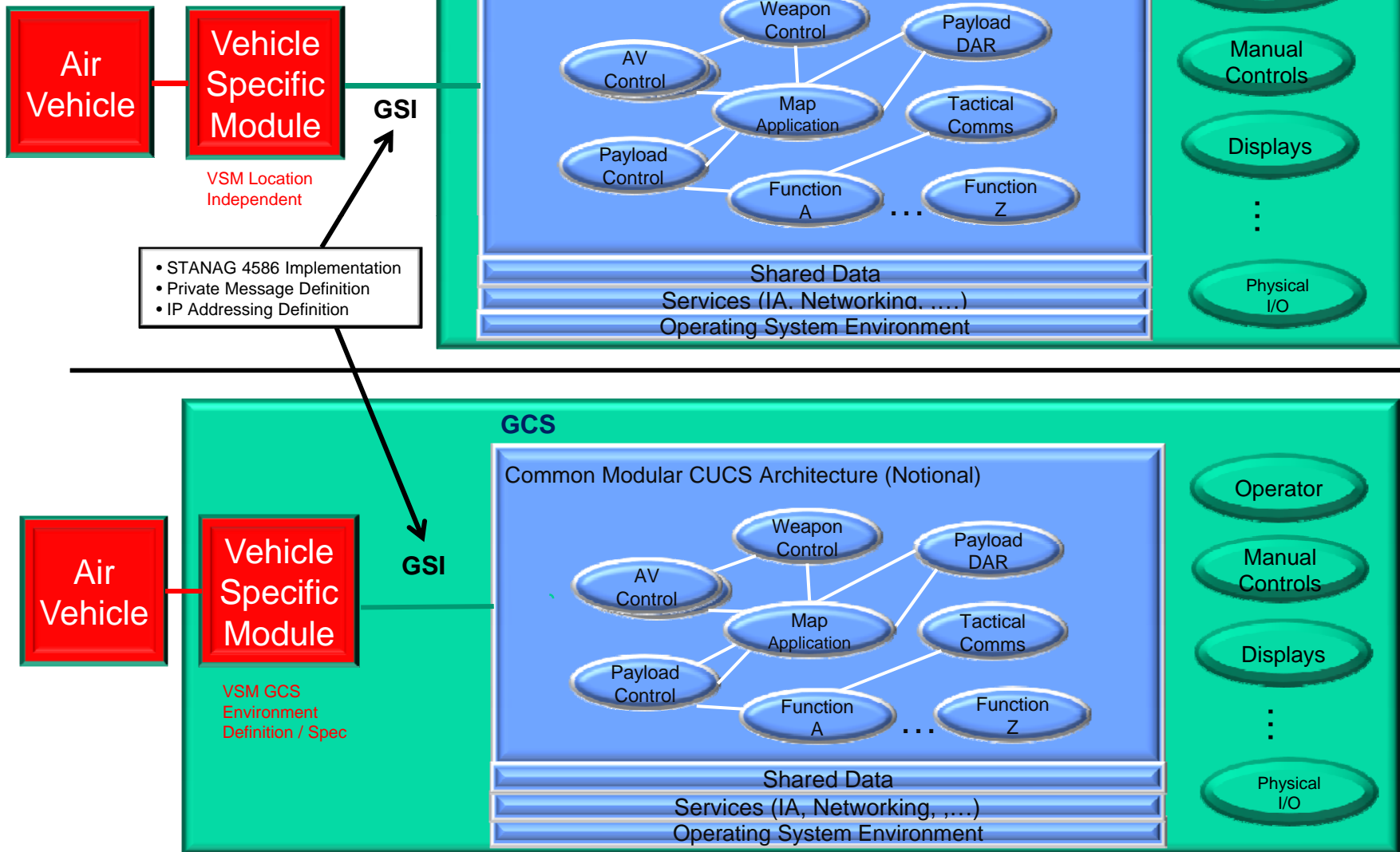


Common Ground Control Station Approach



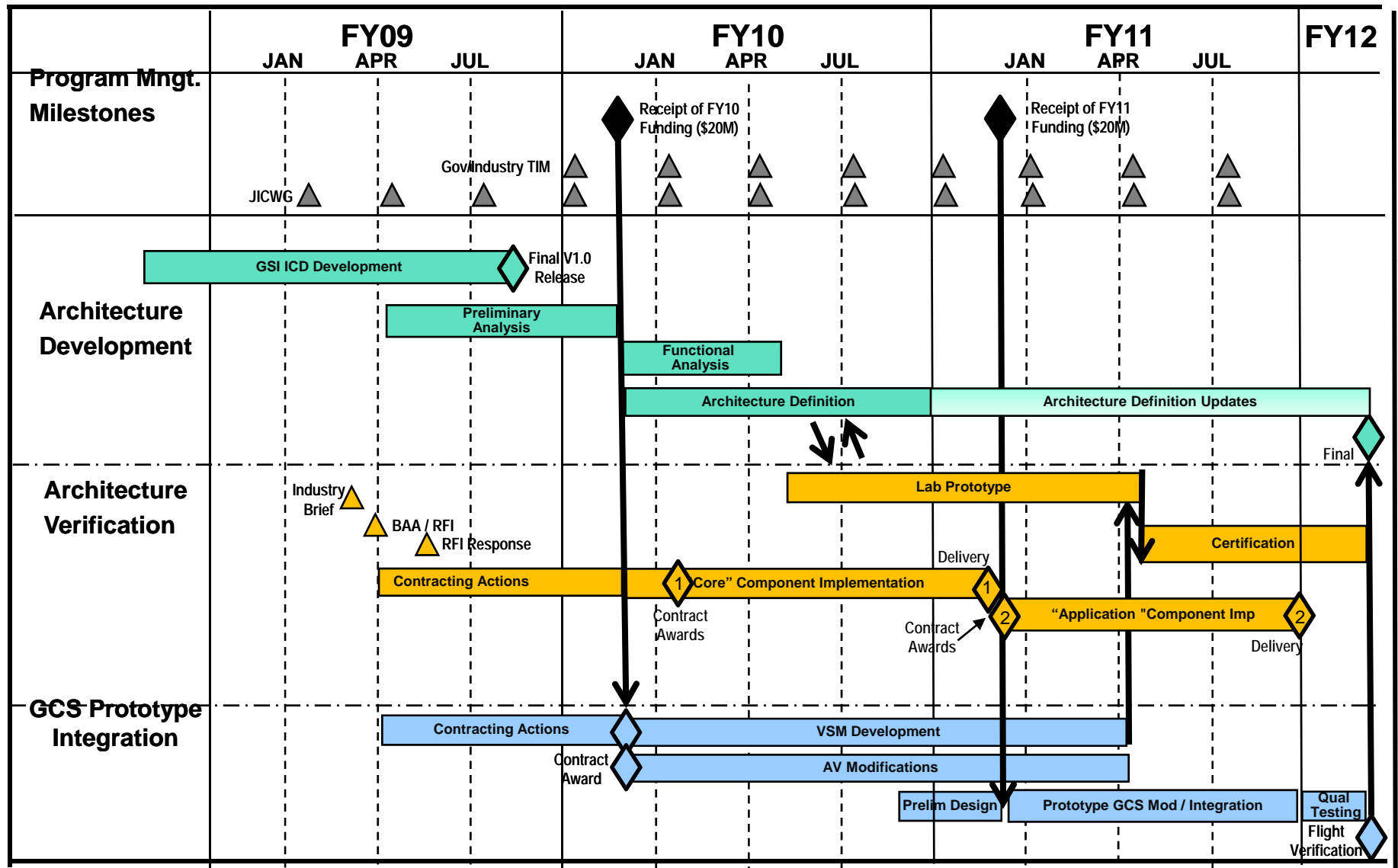


Notional Common Ground Segment Architecture





DOD Common GCS Architecture Schedule (Baseline Funding)





Operational ISR Task Force

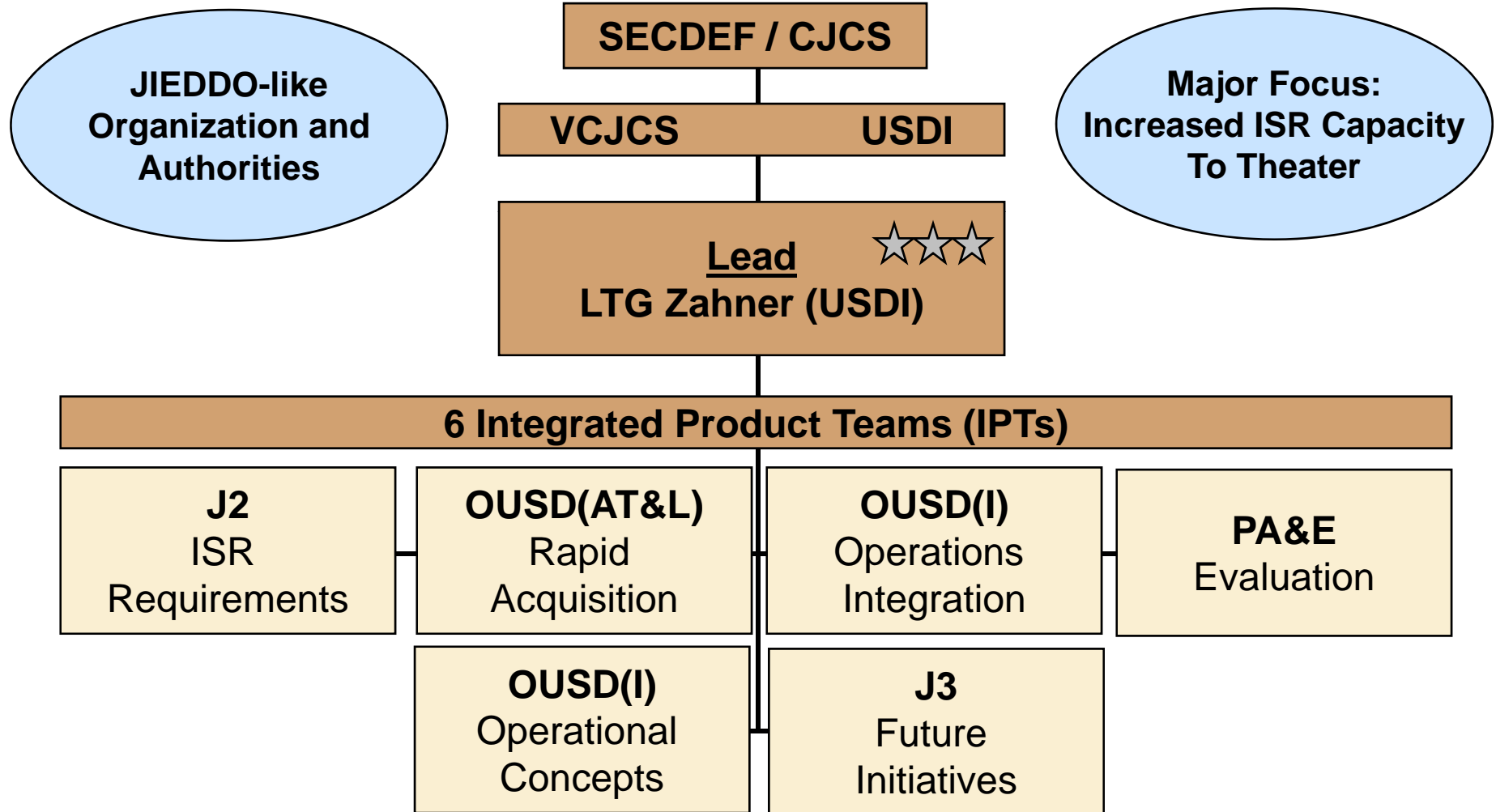
SECDEF CREATES THE ISR TASK FORCE

- **SECDEF Memo dated April 18, 2008**
 - ...I am establishing a Department-wide task force to assess and propose options for maximizing and optimizing currently deployed ISR capability.
- The Task Force shall identify options for deploying additional ISR capability in 30-, 60-, 90-, and 120-day phases.
- The Task Force shall additionally examine the utilization of ISR assets in support of OIF and OEF and identify options for optimizing their usage.



Operational ISR Task Force

OPS ISR TASK FORCE II: August 2008





Congressional Oversight / Direction



GAO Reviews

- **GAO 351096/ GAO-09-0175 “UNMANNED AIRCRAFT SYSTEMS: Additional Actions Needed to Improve Management and Integration of DoD Efforts to Support Warfighter Needs”**
 - Status: Published November 2008
- **GAO 120762 “DOD Unmanned Aircraft Acquisitions”**
 - Entrance Conference held on 12 August
 - GAO is in the process of conducting interviews.
- **GAO 351271 “Department of Defense Plans to Support UAS Programs”**
 - Entrance Conference held on 14 October
 - Follow-up to GAO 351096
 - Primary Interest Areas
 - POM-10 Studies (STRATCOM Force Structure, QRM, etc)
 - ISR Task Force II effectiveness (with regard to UAS)
 - GAO Intends to visit CENTCOM (in theater)



FY09 NDAA (P.L. 110-417)

SEC. 144. REQUIREMENT FOR COMMON GROUND STATIONS AND PAYLOADS FOR MANNED AND UNMANNED AERIAL VEHICLE SYSTEMS

- *“The Secretary of Defense, in consultation with the Chairman of the Joint Chiefs of Staff, shall establish a policy and an acquisition strategy for intelligence, surveillance, and reconnaissance payloads and ground stations for manned and unmanned aerial vehicle systems.”*
- Objectives:
 - Procurement of common payloads by vehicle class
 - Commonality of ground system architecture by vehicle class
 - Common management of vehicle and payloads procurement
 - Ground station interoperability standardization
 - Maximum use of commercial standard hardware and interfaces
 - Open architecture software
 - Acquisition of technical data rights iaw Title 10, Sec 2320
 - Competitive procurement
 - Common standards for exchange of data and metadata
- *“Not later than 120 days after the date of the enactment of this Act (Oct 14, 2008), the Secretary shall submit to the congressional defense committees, the Permanent Select Committee on Intelligence of the House of Representatives, and the Select Committee on Intelligence of the Senate a report containing—*
 - *the policy required by subsection (a); and*
 - *the acquisition strategy required by subsection (a).”*



HR 2638 P.L. 110-329

SEC. 8094 Provisions

- (a) None of the funds appropriated by this Act may be used to transfer research and development, acquisition, or other program authority relating to current tactical unmanned aerial vehicles (TUAVs) from the Army.*
- (b) The Army shall retain responsibility for and operational control of the MQ-1C Sky Warrior Unmanned Aerial Vehicle (UAV) in order to support the Secretary of Defense in matters relating to the employment of unmanned aerial vehicles.*
- (c) None of the funds appropriated by this Act may be used to institute an inter-Service common contract for acquisition of MQ-1 or MQ-1C UAVs until 30 days after the Secretary of Defense certifies to the congressional defense committees that a common contract would achieve cost savings, be interoperable with, and not create undue sustainment costs compared to the current fleet*



Summary

- **Warfighter demand for UAS continues to grow**
- **UAS TF working to increase DoD UAS availability and capabilities**
 - **Standards & Interoperability**
 - **Acquisition Efficiencies**
 - **Airspace Access**
 - **Frequency Spectrum**



Questions?



Back-up Slides



Common Ground Segment Interface

Increments 1 & 2

Description

Develop a Joint Common Ground Segment Interface (GSI) specification which defines Unmanned Aircraft System (UAS) Command and Control (C2) messages between the Air Vehicle (AV) and the Ground Control Station (GCS), facilitating interoperability.

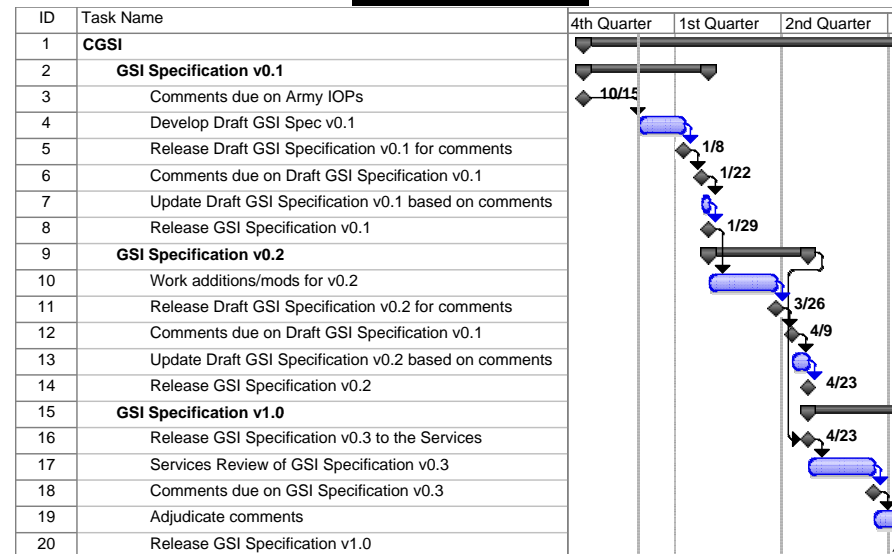
Approach

- Perform gap analysis between current system capabilities and plans and Army Interoperability Profiles (IOPs)
- Prioritize requirements based on gap analysis and generate initial draft GSI specification
- Release initial draft GSI specification for review
- Update draft GSI specification based on review comments

Objectives/Products

- Initial draft Ground Segment Interface (GSI) Specification
- Draft GSI Specification

Schedule





Deputy Secretary of Defense Memo

13 Sep 2007



THE DEPUTY SECRETARY OF DEFENSE
WASHINGTON

September 13, 2007

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UNDER SECRETARIES OF DEFENSE
COMMANDERS OF THE COMBATANT COMMANDS
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
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- The task force will identify to the DAWG and, where appropriate, assign lead organizations for issues related to acquisition and management of UAS, including interoperability, civil airspace integration, frequency spectrum and bandwidth utilization, and airframe payload and sensor management.
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- The Acting USD(AT&L) will evaluate and make recommendations leading to increased competition for UAS acquisition.

These actions will provide for common, joint, and operationally effective UAS programs.



- In lieu of establishing an Executive Agent
 - Tasks USD(AT&L) to establish UAS TF to coordinate critical UAS Issues
 - UAS TF will identify to DAWG issues related to acquisition & management of UAS
 - Directs Predator & Sky Warrior to be combined into a single program to include a common data link
 - Single contract by Oct 08
 - USD(AT&L), in coordination with Joint Staff, to develop Interoperability Standards Profiles tied to JCIDS documents
 - USD(AT&L) will make recommendations leading to increased competition for UAS acquisition



USD(AT&L) Memo

05 Oct 2007

- Directs the formation of a new UAS Task Force
- Requests support from Services for the formation of a UAS Senior Steering Group (SSG)
 - SSG to advise the UAS TF and coordinate significant issues prior to presentation to the DAWG
- Requests active support for UAS TF IPTs



THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

OCT 05 2007

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Please respond by October 8 to Mr. Weatherington at 703-695-6188 or dyke.weatherington@osd.mil. The goal is to achieve coordinated and integrated solutions that allow the DoD to gain maximum benefit from its UAS investment.

John J. Young, Jr.
Acting

Attachments:
As stated

cc:
USD(C)
DUSD(A&T)
D,DR&E
OGC
ASD(HDASA)

