Naval
Unmanned Aircraft Systems (UAS)
PEO (U&W) Overview

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PEO(U&W) Overall Portfolio

Programs Assigned
ACAT ID: 1
ACAT IC: 5 (2 PRE-MDAP)
ACAT II: 2
ACAT III: 3
ACAT IV: 8
Non-ACAT/AAP: 84
Unmanned Attributes

- Persistence
- Reduced Risk to Human Life
- Reliable Precision
- Lower Support Costs
- Versatility
Naval UAS Family of Systems

**Group 5**
- UCAS-D
- BAMS-D
- MQ-4C
- UCLASS

**Group 4**
- Cargo RDC
- MQ-8B FireScout
- MQ-8C FireScout
- Potential Cargo POR
- MRMUAS
- USMC Group-4

**Group 3**
- RQ-7B Shadow
- RQ-21A STUAS

**Group 2**
- ISR Services (ScanEagle)

**Group 1**
- T-Hawk
- Raven-B
- WASP

Legend:
- Operational
- In Development
- Future Development
Guiding Principles for US Navy ISR

- Increasingly sea based & unmanned aircraft
- Every platform is a sensor
- Every sensor is networked
- Modular, scalable plug & play sensor payloads
- Common interfaces, data formats & standards
- Data is discoverable & accessible by all
- Common Unmanned Systems (UxS) Control Stations
- Remoted automated sensors

The Way Ahead is Increased Operational Access, Persistence, Flexibility, and Information Sharing
Navy UAS Operations in the Fleet

**Scan Eagle / ISR Services**
- Approaching 200,000 flight hours in support of forward deployed forces.
- Identification of surface vessels ISO maritime domain awareness
- Surveillance of known smuggling and piracy areas
- Persistent coverage for counter-insurgency operations
- Route Survey Support
- Strike Support
- Surveillance and protection of high value infrastructure (OPLATs)
- Battle Damage Assessment

**BAMS-D**
- Demonstration program with real world utility
- Provides the Fleet a persistent, high-altitude, multi-INT, maritime ISR capability
- Currently on its 30th month of a 6 month deployment
- > 6000 flight hours in CENTCOM AOR
- Providing direct, actionable intelligence
- Tactics, Techniques, Procedures Development

**Fire Scout**
- USS Halyburton over 420 Flight Hours
- SOF and other combat support missions
- Afghanistan RC(North) over 1230 Flight Hours
- Counter piracy missions
- TCDL COMM Relay
- Remote Viewing Terminal exercised
- Conduct of dual H-60/VTUAV Ops
- Lessons learned to mature TTP Development
- Two FFGs for AFRICOM/SOCOM support FY12

**UNCLASSIFIED**
Small Tactical UAS

**RQ-7B SHADOW**

- Small Unit Remote Scouting System, low-cost, reusable sensor systems
- Over 15,000 flight hours and 2,800 sorties in support of OEF from Aug 2009 through June 2011
- Supportability delivered via a Performance Based Logistics contract
- Provide situational awareness within the employing unit’s area of operations

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**RAVEN B**

**Dragon Eye**

**Wasp**

**T Hawk**
BAMS UAS Program Description

- Persistent maritime ISR…integral to the Navy’s airborne ISR recapitalization strategy
- Provides a persistent maritime common operational picture
  - Surface warfare during major combat operations
  - “Trip wire” - intelligence preparation of the environment
- Global war on terror support element
- FORCEnet node

- Part of the Maritime Patrol & Reconnaissance Force (MPRF) Family of Systems
  - Adjunct sensor/platform to P-8
  - Leverage manpower, infrastructure and operational expertise to maximise utility and efficiency
Medium Range Maritime Unmanned Air System (MRMUAS)

- Operable from any air capable ship
- Operational Range: 300 nm radius
- Payload: 700 lbs
- Time on Station: 8 hours
- Sensors: FMV, SAR, ISAR, EW, RADAR, AIS
- Comms: LOS and BLOS

Wideband SATCOM
Narrowband SATCOM
Ship
GCS
SOF
MRMUAS Air Vehicle C2
MRMUAS Payload C2
Tactical Comms Relay
Payload Broadcast
Dashed = (will utilize host ship wideband if available)
Mission:
Mature technologies for a carrier suitable, low observable, relevant, unmanned air system to operate in a carrier environment

Employment:
Demonstrates technologies in support of potential follow-on acquisition programs for CVN-based UAS

Recent accomplishments:
• Surrogate testing with King Air and F/A-18 within CVN environment July 2011
• First carrier landing with surrogate F/A-18 July 2011
• First wheels-up flight Oct 2011
Moving Towards Greater Interoperability

**Current**
- BAMS
- WBSC
- INMARSAT
- LOS 66/20
- Unique
- LOS UHF Primary C2 (IA only)
- Unique
- Unique
- Unique
- Network (PED / C4I Nodes)
- Unique
- Unique
- Unique
- Unique
- Unique
- Unique
- Control Segment
- Control Segment
- RVT
- VTUAV - Fire Scout
- Manned Aviation (R-90)
- Manned Aviation (R-8)

**Near Term**
- LOI 2.3
- LOI 2.4
- LOI 2.4
- LOI 2.4
- Control Segment
- Dismounted Operations
- Dismounted Operations
- RVT

**Long Term**
- Reach Back
- Tasking Auto-Response
- Manned Unmanned Teaming
- Collaborative Behaviors
- Cooperative Unmanned Systems
- Autonomous Behaviors
- Cooperative Behaviors
UAS Common Control System

**The FRAMEWORK**

**The COMMON COMPONENTS**

**The COMMON UI & Presentation Layer**

**Presentation Layer**

- Governance and Business Rules
- Configuration Management
- Technical Interface Rules
- Airworthiness Process
- Information Assurance
- Safety

**Legacy App 1**

- Data Archiving
- Mission Planning
- UHF/VHF Management
- External Messaging
- Weather
- Service A
- Service B
- EOIR C2
- SAR

**Legacy App 2**

- STU
- AS
- C2
- VTU
- AV
- C2

**Legacy App 3**

- BAM
- S
- T
- Unique
- Unique
- Unique

**Service Bus**

- Service A
- Service B
- Service C
- SATCOM
- Weapon
- Red
- Blue

**O/S layer**

- Unique
- Unique
- Unique

**Build These Once!**

**The UNIQUE COMPONENTS**
CCS Effort is…

● A Software System
  – OSD UAS Control Segment (UCS) compliant
  – COTS-based Framework (O/S, Middleware, Minimum Hardware Specification)
  – Interfaces to external services for data consumed and published
  – Consistent (common/tailorable) user interface to maximize operator efficiency & streamline training
  – Scalable with common and unique services

● One control station solution to be capable of operating all UAS aircraft
  – Design must not preclude integration of other Services’ UxS

● Leveraging existing infrastructure (where possible)
  – CANES / Afloat Core Services / Distributed Common Ground System - Navy
  – Maritime Patrol & Reconnaissance Force MOBs & FOBs
  – Tomahawk Mission Planning Cell / Cruise Missile Support Activities

● Government as Lead Systems Integrator

A CCS Comprising Common and Unique Services, Consistent User Interface Tailored for Each Supported Platform
UAS Challenges & Opportunities

- Interoperability
- Autonomy
- Airspace Integration
- Endurance
- Communication Links
- Encumbered by Unmanned Paradigms
- Manpower and Training
- CONOPS & Integration with Manned Systems
- TCPED Architecture & Sensor Volume
- Accelerating Growth and Demand