U.S. Navy and Marines Corps Family of Unmanned Aircraft Systems

presented to

2016 Precision Strike Annual Review

March 15, 2016

Presented by:

Mr. Patrick Buckley

Deputy PEO(U&W) for UAS Programs

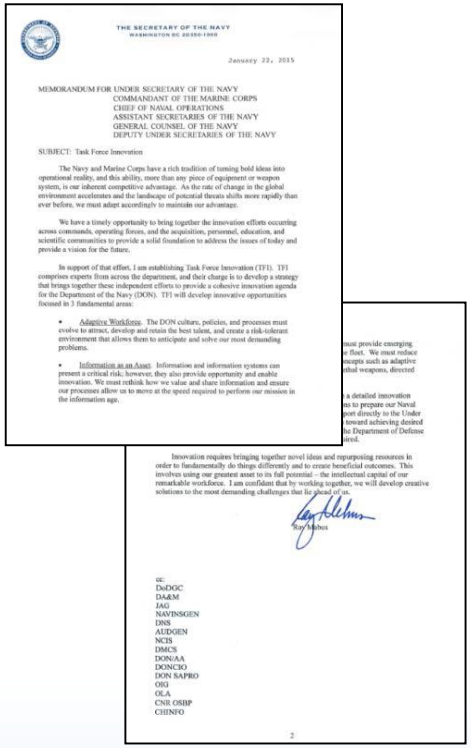
NAVAIR

Embracing Unmanned … Yesterday, Today and Tomorrow

Agility and Innovation

"The DON must provide emerging operational capabilities a clear and expedient path to the fleet. We must reduce barriers and promote a culture willing to accept new concepts such as adaptive force packages, unmanned/autonomous systems, non-lethal weapons, directed energy, and additive manufacturing."

Task Force Innovation



THE SECRETARY OF THE NAVY
WASHINGTON DC 20350-1000

January 22, 2015

MEMORANDUM FOR UNDER SECRETARY OF THE NAVY
COMMANDANT OF THE MARINE CORPS
CHIEF OF NAVAL OPERATIONS
ASSISTANT SECRETARIES OF THE NAVY
GENERAL COUNSEL OF THE NAVY
DEPUTY UNDER SECRETARIES OF THE NAVY

SUBJECT: Task Force Innovation

The Navy and Marine Corps have a rich tradition of turning bold ideas into operational reality, and this ability, more than any piece of equipment or weapon system, is our inherent competitive advantage. As the rate of change in the global environment accelerates and the landscape of potential threats shifts more rapidly than ever before, we must adapt accordingly to maintain our advantage.

We have a timely opportunity to bring together the innovation efforts occurring across commands, operating forces, and the acquisition, personnel, education, and scientific communities to provide a solid foundation to address the issues of today and provide a vision for the future.

In support of that effort, I am establishing Task Force Innovation (TFI). TFI comprises experts from across the department, and their charge is to develop a strategy that brings together these independent efforts to provide a cohesive innovation agenda for the Department of the Navy (DON). TFI will develop innovative opportunities focused in 3 fundamental areas:

- Adaptive Workforce. The DON culture, policies, and processes must evolve to attract, develop and retain the best talent, and create a risk-tolerant environment that allows them to anticipate and solve our most demanding problems.
- Information as an Asset. Information and information systems can present a critical risk; however, they also provide opportunity and enable innovation. We must rethink how we value and share information and ensure our processes allow us to move at the speed required to perform our mission in the information age.

Innovation requires bringing together novel ideas and repurposing resources in order to fundamentally do things differently and to create beneficial outcomes. This involves using our greatest asset to its full potential – the intellectual capital of our remarkable workforce. I am confident that by working together, we will develop creative solutions to the most demanding challenges that lie ahead of us.

Ray Mabus

cc:
DoDGC
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DON SAPRO
ORG
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CHINFO

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It's not just what we do differently, It's how we do it…

Unmanned Warfare Systems
Development Resource Sponsor (OPNAV N99)

Lead a strategic and pioneering rapid development cycle to introduce innovative unmanned system (UxS) technologies to the fleet, from warfighting requirements to prototyping, demonstration, and development.

Warfighting Requirements

Identify Warfighting Capability Needs/Concepts

Collaborate with OPNAV, Fleet, DASN, S&T, WDCs, Industry

Technology Priorities

Prioritize Promising Technologies

Prototyping & Demonstration

Conduct Rapid Prototyping & Demonstration

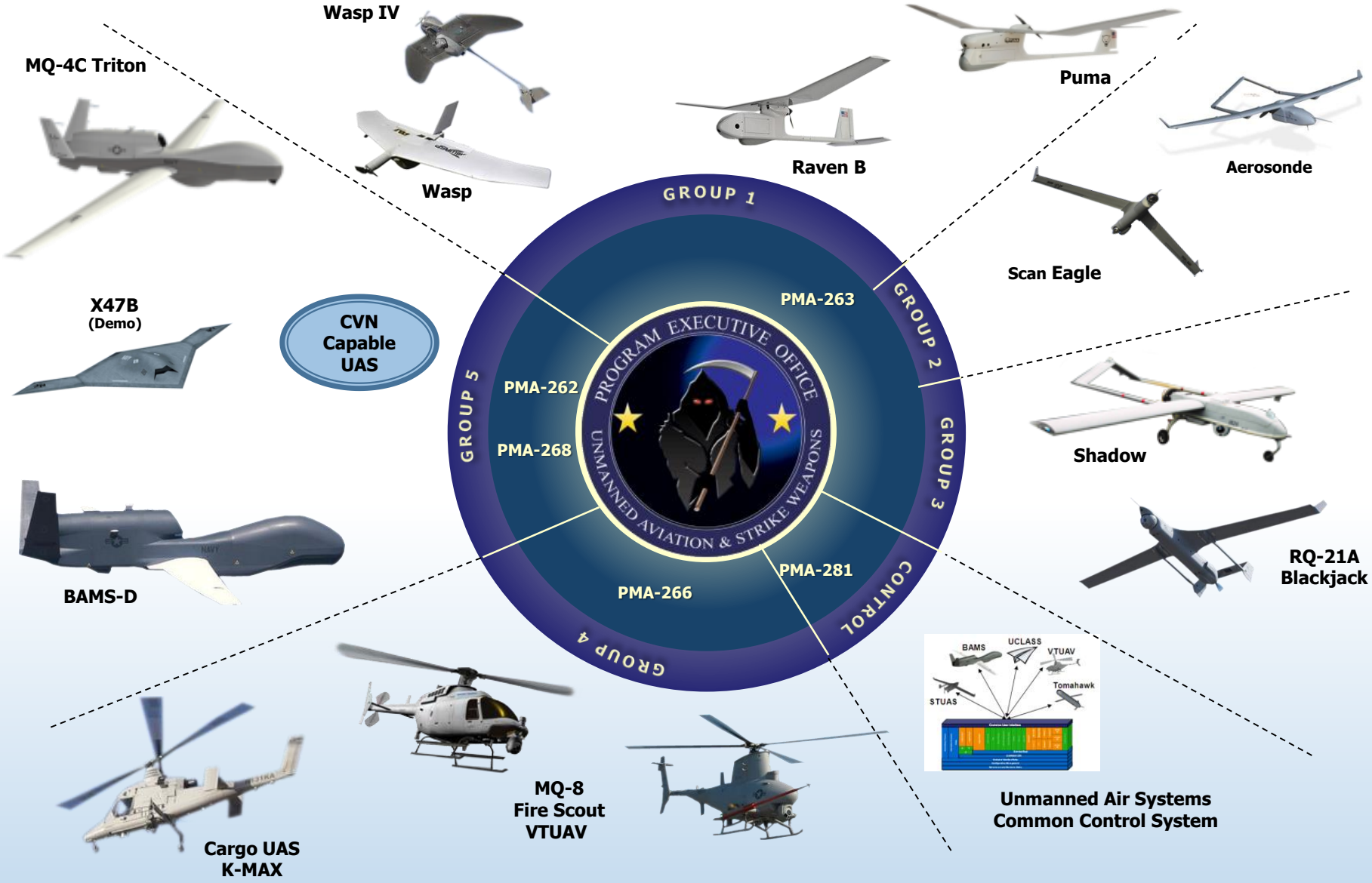
Acquire, Refine, or Terminate

Recommend Acquire, Refine, or Terminate

UAS Groups

UAS Groups	Max Weight (lbs)	Normal Operating Altitude (ft)	Speed (kts)	Representative DoN UASs
Group 1	0-20	<1200 AGL	100	RQ-11 Wasp
Group 2	21-55	< 3500 AGL	<250	Scan Eagle
Group 3	<1320	<FL 180	<250	RQ-21A Blackjack
Group 4	>1320	<FL 180	Any	MQ-8 Fire Scout
Group 5	>1320	>FL 180	Any	MQ-4C Triton

PEO(U&W) UAS Experience



Naval Group 4-5 UAS

INCREASED CAPABILITIES → FUTURE

2012 | 2016 | 2020 | 2024

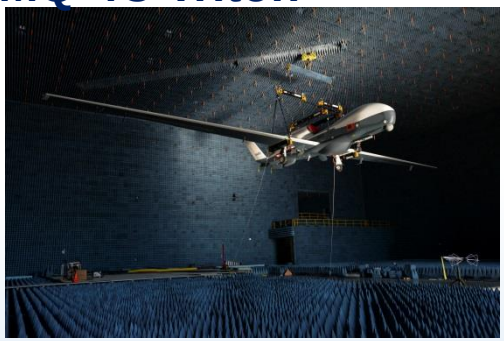
Group 5
GW> 1320 lbs

- BAMS-D
- UCAS
- MQ-4C Triton
- CVN Capable UAS

Group 4
GW> 1320 lbs
OpAlt < 18 Kft

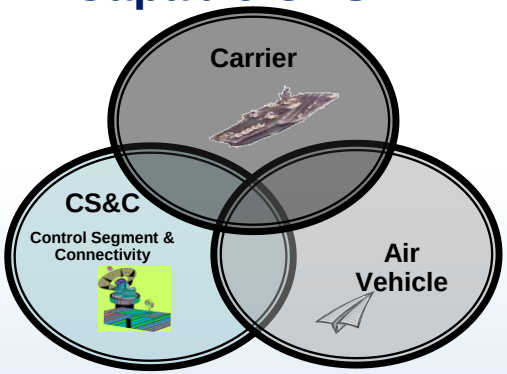
- Cargo RDC
- MQ-8C
- MQ-8B Fire Scout
- Potential Cargo POR
- USMC Group-4 ???

MQ-4C Triton



MQ-8 Fire Scout

CVN Capable UAS



Common Control System (CCS)

Group 3 UAS

RQ-7B Shadow

RQ-21A Blackjack

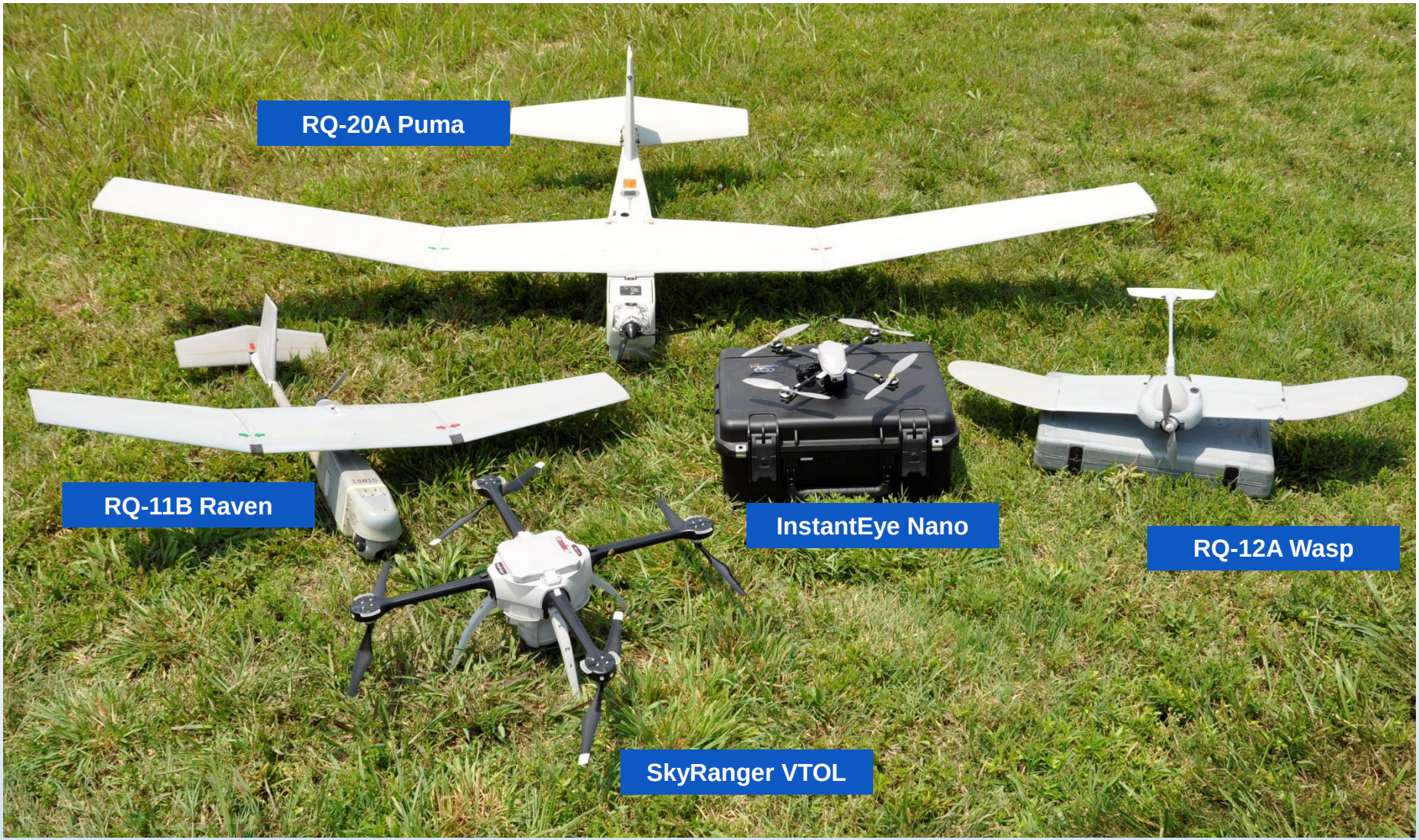
Group 2 UAS - ISR Services

ScanEagle

Aerosonde

Total flight hours (FH): >425,000 (as of February 2016)
Land FH: >391,000 | Ship FH: >33,500
34 ship installs | 30 deployments | 8 classes of ships

Group 1 UAS


RQ-20A Puma
RQ-11B Raven
InstantEye Nano
RQ-12A Wasp
SkyRanger VTOL

Unmanned Challenges & Opportunities

Unmanned Attributes	Unmanned Domains	Cross-Domain Challenges & Opportunities
Persistence Expendability Precision Scalability	Air Surface Sub-Surface Ground Space	➢ Autonomy ➢ Common Control Architecture ➢ Interoperability Standards ➢ TCPED ➢ Manned-Unmanned Teaming ➢ Open Architecture / Modularity ➢ Sensor and Component Reuse ➢ Collision Avoidance ➢ Cyber Vulnerability ➢ Propulsion/Power Endurance ➢ Miniaturization ➢ Swarming / Net-Enabled ➢ Training, Support, Culture ➢ Acquisition Velocity (Speed to Fleet)

Summary

- Navy is on glide slope to provide:
  - Persistence via unmanned systems . . . Increasingly from the sea
  - Capacity with more platforms and sensors
  - Capability with automated sensors
  - Flexibility with modular, scalable “plug & play” sensors
  - Timeliness through effective TCPED process
  - Connectivity through secure information sharing

Navy’s intent is to produce a family of capable, effective, and interoperable unmanned systems that integrate with manned platforms and ships to provide situational awareness and warfighting advantage to commanders at all levels

Questions