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# ***DoD Unmanned Systems Integrated Roadmap***

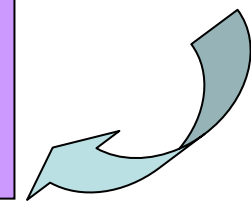
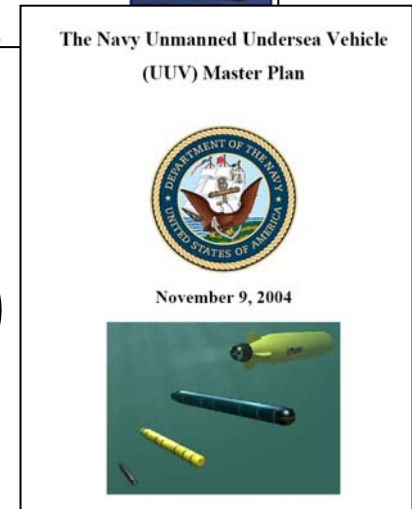
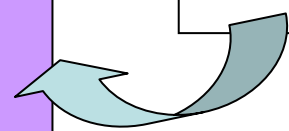
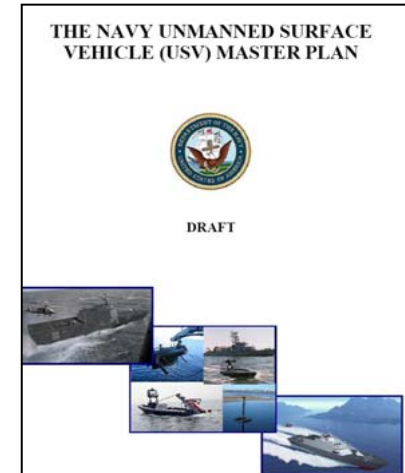
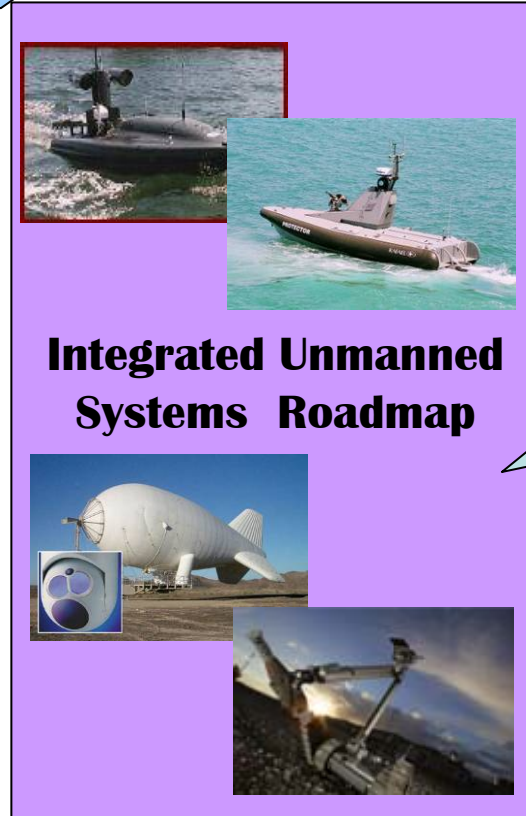
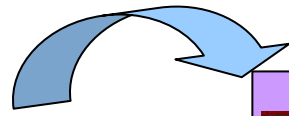
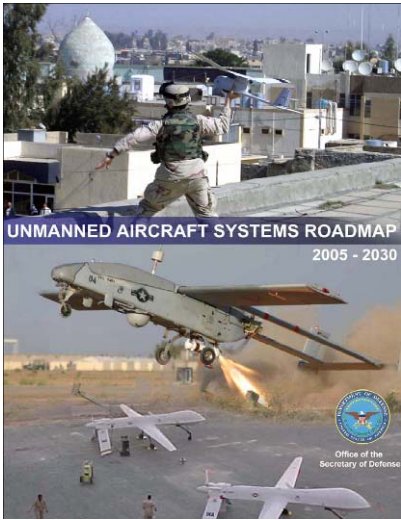
**Presented at the Ground Robotics Capability  
Conference**

**4 March 2008**

**Mr. David Ahern  
OUSD(ATL)/PSA  
david.ahern@osd.mil**



# Integrated Unmanned Systems Roadmap





# Public Law 109-364 SEC 941

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**REPORT.** – Not later than 120 days after the date of the enactment of this Act, the Secretary shall submit to the congressional defense committees a report containing –

- the policy required by subsection (a); and an **implementation plan** for the policy that includes –
  - a strategy and schedules for the replacement of manned systems with unmanned systems in the performance of the mission identified in the policy pursuant to subsection (b)(1);
  - establishment of programs to address technical, operational, and production challenges, and gaps in capabilities, with respect to unmanned systems; and
  - an assessment of progress towards the goals identified for the subset of unmanned air and ground systems established in section 220 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (as enacted into law by Public Law 106-398; 114 Stat. 1654A-38).

**UNMANNED SYSTEMS DEFINED.** – In this section, the term “unmanned systems” consists of unmanned aerial systems, unmanned ground systems, and unmanned maritime systems.



# Roadmap Introduction

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The Unmanned Systems Integrated Roadmap is a master plan that describes the intended future state of the Unmanned Systems Product Line Portfolios and the actions to be undertaken to achieve that future state.

The Roadmap will serve to inform future decision making associated with the management of the Unmanned System Portfolios as they provide needed capabilities to the joint Warfighter.





# Purpose

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- The Purpose of the Unmanned Systems Integrated Roadmap is to project a future vision for how unmanned systems will be developed, acquired, and sustained as part of the materiel employed by the DoD.
- The Roadmap will:
  - Identify recommended intermediate states of advancement along the way to achieving that vision
  - Identify Strengths, Weakness, Opportunities, Challenges, and Risks associated with achieving that future vision
  - Identify those actions and responsible organizations that will capitalize on the strengths and opportunities, and mitigate the challenges and risks
  - Be responsive to plans, concerns, and issues of DoD, Services and organizations as well as Statute and Congressional Intent



# Scope

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## **The Scope of the Roadmap will address:**

- The 3 Product Line Portfolios:
  - Unmanned Aircraft Systems
  - Unmanned Ground Vehicles
  - Unmanned Maritime Systems (Surface and Undersea)
- from 2009 – 2034
- technology development, standardization, interoperability, joint acquisition, policy

## **The Roadmap will not address:**

- detailed operational concepts for employing unmanned systems
- operational requirements for unmanned systems



# Addressing Capability Needs via Unmanned “Means” (notional)

2009

2034

<p>JCA 1- Battlespace Awareness</p>	<p>RECONNAISSANCE-UAS</p> <p>MAN-PORTABLE EOD-UGV</p> <p>GLOBAL HAWK-UAS</p> <p>SIGINT COLLECTION-UAS</p> <p>INFORMATION OPERATIONS-UUS</p>
<p>JCA 4- Force Application</p>	<p>TACTICAL STRIKE-UAS</p> <p>MINE WARFARE-USV</p> <p>PENETRATING STRIKE-UAS</p> <p>INTEGRATED STRIKE-UAS</p> <p>TIME CRITICAL STRIKE-UUS</p>
<p>JCA 5- Protection</p>	<p>MARITIME PATROL-UUS</p> <p>HULL UUV LOCALIZATION SYSTEM-UUV</p> <p>ACTIVE RANGE CLEARANCE-UGV</p> <p>MINE NEUTRALIZATION-UGV</p> <p>MULE-UGV</p> <p>SUGV-UGV</p> <p>COUNTERAIR-UAS</p>
<p>JCA 6- Logistics</p>	<p>CONVOY OPERATIONS-UGV</p> <p>AERIAL REFUELING-UAS</p> <p>MANUEVER SUPPORT &amp; SUSTAINMENT-UGV</p> <p>MULE-UGV</p> <p>AIRLIFT-UAS</p>









# Unmanned Systems Technology Enablers (notional)



1	Battery Powered	Hybrid Electric	Fuel Cell	Solar Powered
2	Spectrum Constrained RF	Frequency Hopping		Non-RF Comms
3	Mild Weather			All Weather
4	Passive Signature Management		Active Signature Management	
5	Architecture Proprietary/Limited	Architecture Standard	Architecture Standard Unlimited	
6				
7				
8				
9				



# Tasking Memo



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

ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

FEB 01 2008

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR INTELLIGENCE  
DIRECTOR, DEFENSE RESEARCH & ENGINEERING  
ASSISTANT SECRETARY OF DEFENSE (HOMELAND  
DEFENSE AND AMERICAS' SECURITY AFFAIRS)  
ASSISTANT SECRETARY OF DEFENSE (NETWORK  
AND INFORMATION INTEGRATION)  
SERVICE ACQUISITION EXECUTIVES  
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION  
DIRECTOR, DEFENSE ADVANCED RESEARCH  
PROJECTS AGENCY  
DIRECTOR, NATIONAL GEOSPATIAL-INTELLIGENCE  
AGENCY  
JOINT STAFF, J-8  
ARMY DEPUTY CHIEF OF STAFF (G-8)  
DEPUTY CHIEF OF NAVAL OPERATIONS  
(INTEGRATION OF CAPABILITIES AND RESOURCES)(N8)  
DIRECTOR, OPERATIONAL CAPABILITY REQUIREMENTS  
HEADQUARTERS, UNITED STATES AIR FORCE (A5)

SUBJECT: Unmanned Systems Integrated Roadmap, 2009-2034

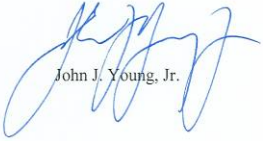
Public Law 109-364, section 941, requires the Secretary of Defense to establish an implementation plan to address technical, operational, and production challenges and gaps in capabilities with regard to unmanned systems. The purpose of the FY09-34 *Unmanned Systems Integrated Roadmap* is to project a future vision for how unmanned systems will be developed, acquired, and sustained to ensure DoD compliance with PL 109-364. It will address all three Product Line Portfolios: Unmanned Aircraft Systems, Unmanned Ground Vehicles, and Unmanned Maritime Systems (Surface and Undersea).

My office has developed a strategy to produce the Roadmap by the end of this calendar year. This strategy involves a Subject Matter Expert Working Group from Department laboratories and Program Offices to link capability needs identified by the Joint Capability Areas with unmanned system technologies from all three domains. An Integration Team composed of representatives from my office, the Joint Staff, Service headquarters, and other OSD and Department agencies will synchronize the results of the Working Group to ensure a logical plan consistent with the Public Law.



By February 12, request you assign Air, Land and Sea systems action officers (AOs) to support this effort. AOs for the Integration Team should be at the O-6 level and at the subject matter expert level for the Working Group. We intend to have a kick-off meeting for the Roadmap in mid-February.

We appreciate your staffs' support in developing a new Integrated Roadmap. My points of contact for the Roadmap are Mrs. Ellen Purdy, 703-693-9617, for Ground Vehicles; Mr. Dyke Weatherington, 703-695-6188, for Aircraft Systems; and Lieutenant Commander Rick Myers, 703-697-2423, for Maritime Systems.

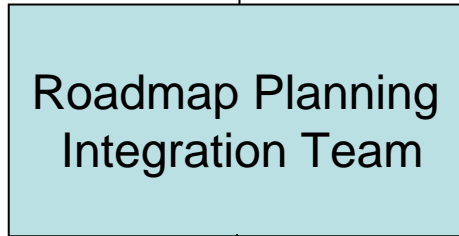
  
John J. Young, Jr.

cc:  
USJFCOM



# Planning Organization

Senior Council populated by PSA, DDRE, Joint Staff, Services GO/SES



Integration Team populated by PSA Domain reps, DDRE, Joint Staff, Other DoD Orgs, Service HQs at 06 level

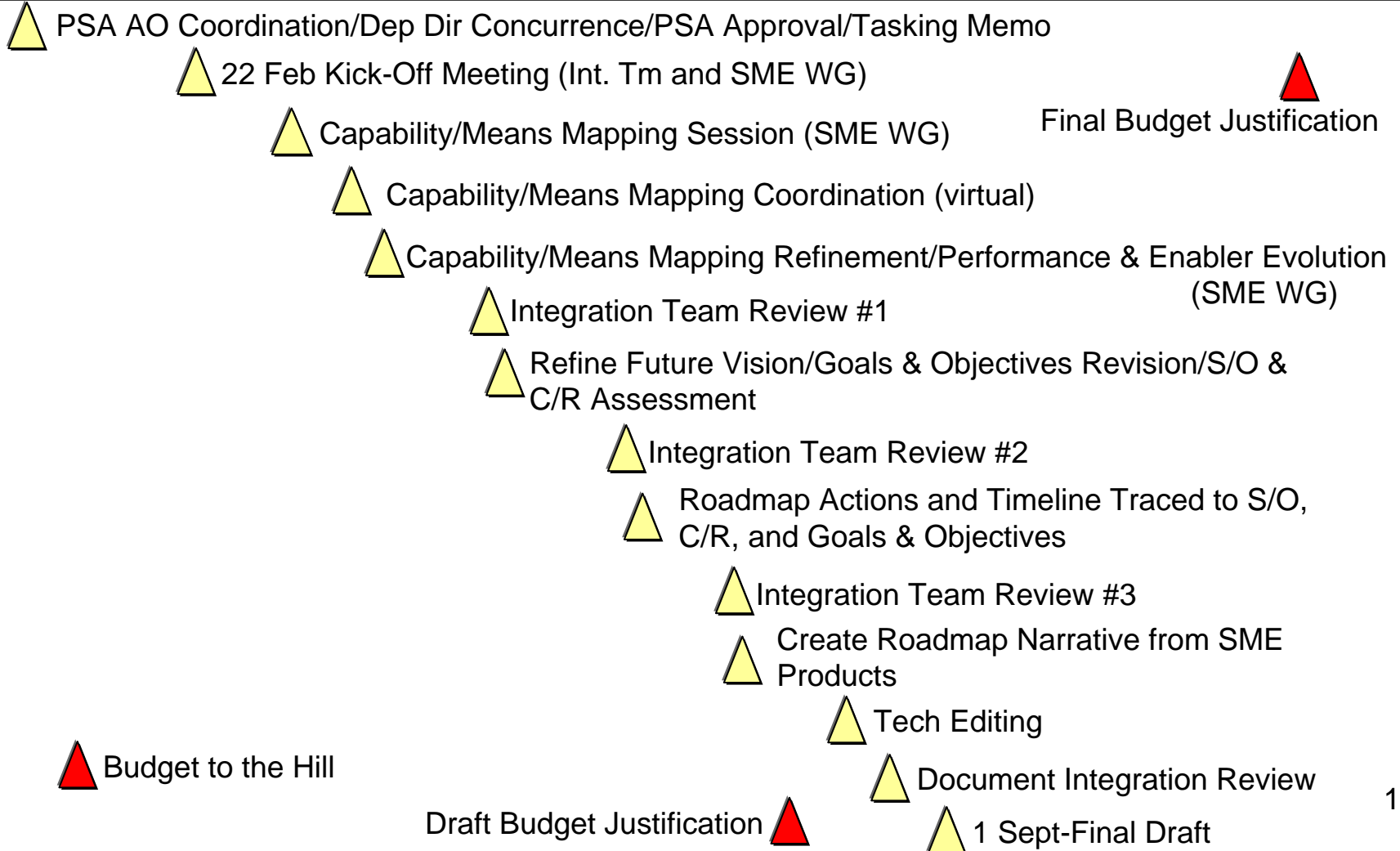


Working Groups populated by Subject Matter Experts from DoD labs, Program Offices, other as needed



# Roadmap “Battle Rhythm” FY08-FY09

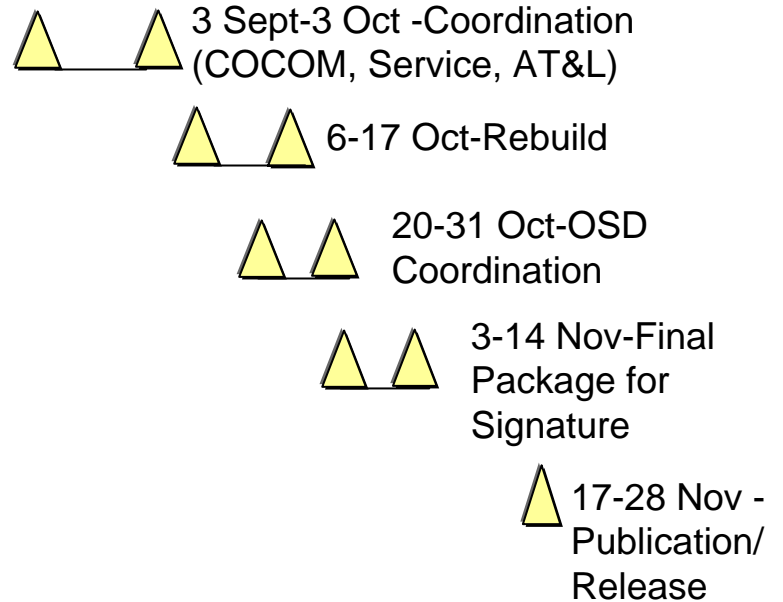
Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec





# Roadmap “Battle Rhythm” FY08-FY09 (continued)

Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec



 Appropriations

 Authorizations



# Conclusions

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- The 2009 Integrated Roadmap represents the first attempt to create our path forward across all the Domains from the bottom up.
- The Roadmap will represent a vision of how robotics can potentially satisfy capability needs, but that does not equate to all future needs being answered by robots.
- The Roadmap seeks to “connect the dots” between future capabilities, unmanned systems performance, and enabling technologies so that we focus our investments into critical need areas.
- The Roadmap will address unmanned systems from a product line portfolio perspective. The idea is to recognize opportunities and minimize risks so that we capitalize sooner and more efficiently on what unmanned systems can do for DoD.