



**REMOTELY PILOTED AIRCRAFT SYSTEMS
SYMPOSIUM
23-25 March 2015**

**WORKSHOP 4
Civil/Military
Working Together for a Common
Future**

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OUTLINE

- **Airspace challenges**
 - Joint Use Airspace Policy
 - Expanding RPAS Operations
- **Collaborative Efforts**
 - Unmanned Aircraft Systems Executive Committee
 - Aviation Rulemaking Committee
 - Science and Research Panel
 - Cooperative Agreements
- **Questions**

Airspace Authority

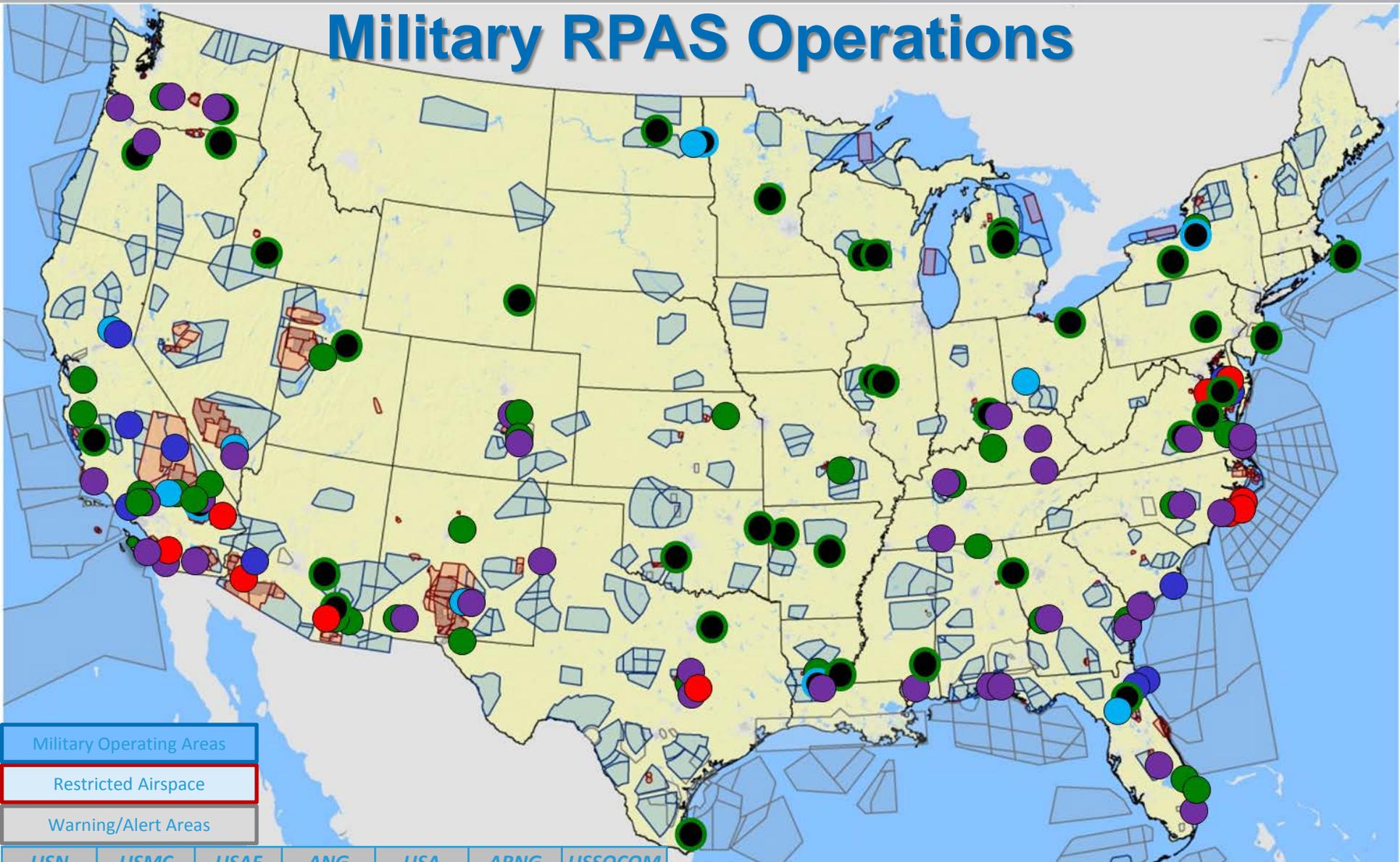
The U.S. Government has exclusive sovereignty of airspace of the United States. The FAA Administrator, in consultation with the Department of Defense (DoD), establishes airspace areas in the interest of national defense, security, and/or welfare

Special use airspace (SUA) is designed for activities that must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both.

Initial operations in the United States of RPAS were flown by the DoD in SUA



Military RPAS Operations



Military Operating Areas
Restricted Airspace
Warning/Alert Areas

USN	USMC	USAF	ANG	USA	ARNG	USSOCOM
●	●	●	●	●	●	●

Airspace Management

Cornerstone document for FAA & DoD Airspace Management is the Joint-Use Airspace Policy for Special Use Airspace

Joint Use Policy defines clear roles and responsibilities between FAA and DoD organizations

Joint Use Airspace Policy is executed in real-time with procedures for activation and deactivation of airspace to efficiently manage air traffic

Joint Use Airspace Policy

Guiding principle:

Special Use Airspace (i.e. Restricted Area, Warning Area) is released back to the National Airspace System and becomes available, in real-time, for access by nonparticipating aircraft during periods when the special use airspace is not needed for its designated purpose

Nonparticipating air traffic is informed of special use airspace areas and usage with information published on aviation charts and altitudes and hours of operation are broadcasted by NOTAM



COLLABORATIVE EFFORTS

UAS Executive Committee
Aviation Rulemaking Committee
Science and Research Panel
Interagency Agreements

UAS Executive Committee

- **The UAS Executive Committee is a multi-agency, Federal executive-level committee composed of Federal stakeholders/enablers of UAS operations**
 - Federal Aviation Administration (FAA)
 - Department of Defense (DoD)
 - Department of Homeland Security (DHS)
 - National Aeronautics and Space Administration (NASA)
- **Focused on US federal public UAS**
 - Activities organized to benefit, and likely accelerate, routine airspace access for the broader UAS Community
 - Coordinate and align efforts between above agencies
 - Coordinate and prioritize technical, procedural, regulatory, and policy solutions needed to deliver incremental capabilities
 - Resolve conflicts among Federal Government agencies

UAS Executive Committee

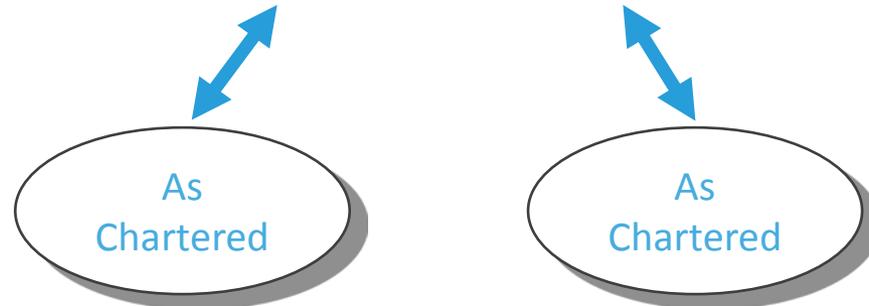
UAS ExCom
“Senior Executives”



Senior Steering Group
“Agency Action”



SSG Working Groups
“Subject Matter Experts”



Tactical Level Activities

Multiple Unmanned / Manned Ops (MUM) in Class D airspace

Identify processes and procedures to allow simultaneous multiple unmanned/manned ops

- Developed procedures for DoD joint use airspace
 - Developed concept of operations for MUM operations, including civil aircraft, at Robert Gray Army Airfield (RGAAF), Ft Hood, TX.
 - DoD conducted and certified the composite risk management and safety analysis
 - RGAAF began MUM operations in Aug 2014
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UAS Remote Operations

Identify processes and procedures to allow simultaneous multiple unmanned/manned ops

- Successful 2013 summer Arctic small UAS beyond-line-of-sight operations yielded a blueprint for safe and routine operations
 - Successful completion of 2014 summer Arctic UAS demonstrations (Over land & Water) including pipeline survey.
 - Developing CONOPS and schedule for joint civil-USCG operations for Summer 2015
- 

Strategic Level Activities

Interim Access Solutions

Identify interim solutions and paths to increase federal public UAS operations to the NAS in mid term

- Fielding Ground Based Sense and Avoid systems for provide safe, easy and cost effective access to training ranges
- Supporting DoD Joint Test to refine and improve standardization of UAS procedures



R&D and Policy Solutions

Identify R&D gaps and policy/regulatory shortfalls

- Ensuring lead agencies identified to prevent R&D duplication and ensure effective use of resources
- Support FAA process (ARC and SC-228) to update/change FARs to define standards and enable UAS operations in the NAS
- Commissioned interagency analysis to develop a definition of “well clear” for UAS DAA systems



Strategic Level Activities

International Collaboration

Exchange information concerning international activities relating to UAS operations in international airspace

- Clearing house to share significant information concerning UAS activities in the international community
- Produce coordinated ExCom agency inputs to develop a unified US position, when required



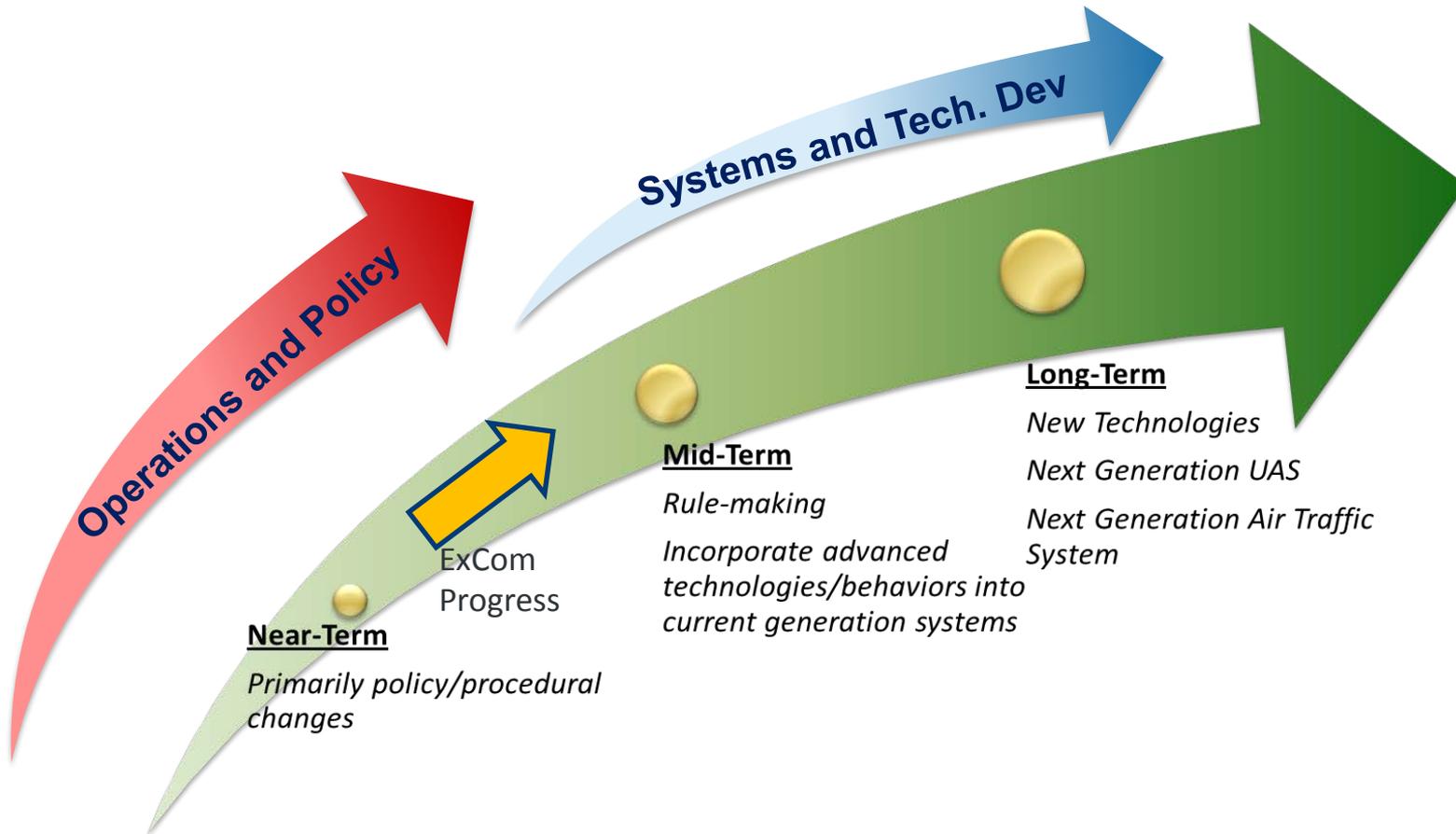
Public Standards Development

Identify operational and certification requirements that must be developed and implemented to enable public UAS routine operations within the National Airspace System (NAS).

- Identify operational and certification requirements for public UAS operations within the NAS
- Focus of this effort is limited to public UAS operations conducted by “public aircraft” as defined in Title 49 of the United States Code
- Provide guidance to aid public UAS operators on establishing training and airworthiness programs to meet the requirements for an FAA issued COA for UAS operational approval



Incremental Approach for Increasing Airspace Access for RPAS



Aviation Rulemaking Committee

- Unique to the FAA
- Formed on an ad hoc basis, for a specific purpose, and are typically of limited duration
- **Why a UAS ARC?**
 - Objectives/Scope/Membership
 - Forum for the aviation community to discuss, prioritize and resolve issues
 - Provide direction for UAS operational criteria
 - Support the NextGen Implementation Plan
 - Produce consensus positions for global harmonization
 - Develop FAA draft advisory circular language and updated guidance materials, notices, handbooks
 - Make recommendations to the Administrator
 - Members (i.e. government, industry, civil aviation organizations) selected based on familiarity with UAS analysis and regulatory compliance

Aviation Rulemaking Committee

- **What's the UAS ARC's purpose?**
 - Development of UAS criteria and standards
 - Facilitation of maximum or ideal use of modern technology, including communication, navigation and surveillance capabilities used by manned aircraft
 - Integration UAS into the NAS while reducing risk
 - Evolving technologies and potential equipment upgrades to provide increased operation and safety benefits
 - Harmonization of global certification, operations, procedures and standards in accordance with ICAO
- **What's their timeline?**
 - Provide recommendations – solely advisory
 - Will develop work/implementation plans for each recommendation
 - Includes quarterly status reports and final recommendation report (due April 2016)

Science and Research Panel (SARP)

- Established in 2011 by DoD with experts engaged in science and research to “solve” Detect and Avoid
- Expanded in June 2013 to include FAA, NASA, and US Department of Homeland Security
- Reports to UAS ExCom



Science and Research Panel (SARP)

- **Two years of research to define “Well Clear”**
 - Quantitative definition to enable design of a Detect and Avoid system to satisfy “See and Avoid”
- **Work ongoing in other collaborative efforts to evaluate reducing vertical threshold**
 - Exploring alerting options
 - Seeking improvements for operational acceptability

Interagency Agreements

- **DoD and FAA signed an agreement in September 2013 that greatly expanded DoD ability to fly RPAS in the US**
 - Simplified notification and approval process for small UAS and in DoD managed Class D airspace
 - Eased restrictions on night operations
 - Expanded areas of acceptable flight of small UAS
- **Agreement to collaborate on Test and Research**
 - Joint Test to standardize airspace procedures for RPAS
 - DoD pilots participate in FAA testing for ATC procedures and training development



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Central American
and Caribbean
(NACC) Office
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South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
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Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU