

Forest Service Unmanned Aircraft Systems (UAS) Advisory Group UPDATE

Tactical Fire Remote Sensing Advisory Committee Meeting

November 8, 2012

USDA Forest Service, Remote Sensing Applications Center,
FSWeb: <http://fsweb.rsac.fs.fed.us>
WWW: <http://www.fs.fed.us/eng/rsac/>



UAS in the Forest Service - Background

- Several UAS missions conducted in last several years
 - Operational, research and demonstration/evaluation
 - Two track approach
- Application areas
 - Fire management
 - Resource mapping/inventory
 - Law enforcement
 - Research
- Conducted before agency established UAS policy



Current Forest Service UAS Perspective

- Leadership recognizes high potential of UAS
 - New and evolving technology so we need to proceed with caution
 - Currently in a “stand down” until further notice
- Need to assess UAS implications on Forest Service manned aircraft program
 - Augment manned aircraft capabilities, not replace
 - Identify niche applications currently underserved
 - Leverage technology transfer benefits



Current Forest Service UAS Policy

- UAS are considered the same as manned aircraft (FSM 5713.7)
 - Acquisition
 - Carding of pilots/aircraft
 - Inspections
 - Maintenance
 - Avionics
 - Training
 - Operations
- Agency requirements to utilize UAS (FS NASMP 5.28)
 - Coordinate with Forest Service Washington Office and RAO
 - Completed and approved USFS and FAA documentation/procedures
- UAS considerations do not always reconcile with manned aircraft policies
 - Agency aviation policy and procedures review is needed

Forest Service UAS Advisory Group (UASAG)

- Charter developed and committee organized in early CY2012
 - Membership representation across USFS deputy and staff areas
- Charter signed in September 2012:
 - Fire and Aviation
 - Engineering
 - Forest Health and Protection
 - Forest Management Sciences

May 21, 2012



USDA FOREST SERVICE–FIRE AND AVIATION MANAGEMENT

UNMANNED AIRCRAFT SYSTEMS ADVISORY GROUP

CHARTER

Background

Unmanned Aircraft Systems (UAS) consist of the airframe, sensor and communication technologies, telemetry systems, and guidance equipment required for safe launch and recovery. The application of UAS and related technologies is currently being adopted by several agencies to monitor and characterize conditions of resources, structures, weather, etc. to support a variety of operational applications and information needs. The potential benefits of these technologies to the Forest Service include rapid and focused deployment, unique data acquisition and communications capabilities, and reduced risks to personnel.

UAS and associated technologies are rapidly emerging and hold potential to support operational needs across several deputy and staff areas within the Forest Service. Consequently, the ongoing rapid advancement in UAS and associated technologies, and the requirements for UAS operations to adhere to aviation regulations, necessitate the need to facilitate an agency-wide approach to coordinating and managing the operational implementation of UAS in the Forest Service.

Name

The name of this group, hereinafter referred to as the Advisory Group, is the USFS Unmanned Aircraft Systems Advisory Group. The Advisory Group will operate under the auspices of the Forest Service Fire and Aviation Management (FAM).

Authority

The Advisory Group is established pursuant to the authorities granted by the Director of Fire and Aviation Management.

The deliberations of this Advisory Group are exempt from the Federal Advisory Committee Act under section 204 of the Unfunded Mandates Reform Act of 1995.

The Advisory Group receives leader's intent and direction from the Director of Fire and Aviation Management and reports to the Assistant Director of Aviation.

The Chair of the Advisory Group is authorized to convene meetings, schedule agenda items, make contacts, negotiate work assignments, make commitments on behalf of the Advisory Group, may charge members or technical specialists with tasks, create working groups and task teams, or commit such resources as are available within the Advisory Group or as authorized by the Director of Fire and Aviation Management.

Forest Service UASAG Members

- Committee Chair (Bob Roth)
- Airworthiness/Aircraft and Pilot Inspection (Gil Elmy)
- Aviation Policy (Eddie Morris)
- Aviation Safety (Ron Hanks)
- Communications (Steve Jenkins)
- Engineering (Everett Hinkley)
- Forest Health Protection (Jeff Mai)
- Forest Service Information Technology (Sean Triplett)
- ICS/Fire Suppression (Mike Quesinberry)
- Law Enforcement and Investigations (Tim Lynn)
- Remote Sensing Applications Center (Brad Quayle)
- Regional Aviation Officer (Dan Zimmerman)
- Research and Development (Matt Dickinson)
- Technology and Development (Rey Farve)

(SMEs will be added as interim members)



UASAG Objectives

- Determine if there is an agency need for UAS
 - Assess feasibility of implementation
- Agency aviation policy review/recommendations
 - Acquisition and use of UAS and associated technologies
- Develop agency protocols
 - UAS missions; External agency coordination
- Prepare agency UAS guidance documentation
 - Communication plan, strategic plan and risk assessments

What have we done lately??

What are we doing now??

UASAG Communications Plan

Forest Service (FS) Unmanned Aircraft Systems (UAS) Charter-Based Communication Plan

Summary

The purpose of this document is to help guide the FS UAS Advisory Group's communication activities through the completion of the FS UAS Strategic Plan. This communication plan identifies and describes actions and tasks that must be performed or completed (outside of the project plan), the intended audience, and individuals responsible for performing or accomplishing each action or task. The three primary objectives of this plan are to:

- Ensure FS UAS Advisory Group members and others that work on behalf of the advisory group are on the same page.
- Inform FS leadership of UAS Strategic Plan development and obtain feedback.
- Communicate consistently to target audiences throughout the development of the FS UAS Strategic Plan.

Audiences

The FS UAS Advisory Group, FS Leadership, FS UAS Advisory Group Charter Signatories, FS Aviation Management Personnel, and Other represent six target audiences used in this communication plan. A description of each audience is described below.

Audience Category	Description
FS UAS Advisory Group	The FS UAS Advisory Group members and anyone working on behalf of the advisory group.
FS Leadership	Regional Foresters, Station Directors, Area Director, and ITF Director.
FS UAS Advisory Group Charter Signatories	All signatories on the FS UAS Advisory Group Charter (the Directors of Fire and Aviation Management, Engineering, Forest Health Protection, and Forest Management Sciences).
FS Aviation Management Personnel	All RAOs, RASMs, and other aviation management personnel.
External Agency Partners	Relevant partners in external agencies including USGS, NPS, BLM, CBP, and more.
Other	This audience includes all potential audiences that have not been captured in the categories listed above.

FS UAS Charter-Based Communication Plan | 4
Last Updated: September 20, 2012

Communicate FS UAS Advisory Group's Activities and FS UAS Policy Tasks & Items

Item/Task/Action	Description/Method/Message	Audience (see audience description on page 1)	Frequency/Date	Owner (or Delegated Authority)
Report Charter Status	Provide status on Charter with each meeting until it is signed.	• FS UAS Advisory Group	COMPLETED	Bob Roth
Communicate FS UAS Advisory Group Charter	Draft and email a formal letter indicating that the FS UAS Advisory Group exists, highlight objectives of the advisory group, and where to get more information.	• FS Leadership	Once—after Charter is signed.	Bob Roth
Create Interim FS UAS Website	Generate interim FS UAS website that communicates current/interim FS UAS policies and guidance materials.	• All audiences	Once—send link out in letter after Charter is signed.	RSAC
Update Leadership	Provide leadership with periodic updates on FS UAS Advisory Group's accomplishments.	• FS UAS Advisory Group Charter Signatories	Quarterly	Bob Roth, Everett Hinkley, or RSAC
Present Alternative Analysis Report	Present the findings of the Alternative Analysis Report.	• FS UAS Advisory Group Charter Signatories	Once—after the Alternative Analysis Report is completed.	Bob Roth or Everett Hinkley
Disseminate Interim FS UAS Policy Briefing Paper	Disseminate interim FS UAS policy briefing paper as requested by email, make available on interim FS UAS website, and educate groups or individuals as needed on the current status and policy of UAS in the FS.	• FS UAS Advisory Group • FS UAS Advisory Group Charter Signatories • FS Leadership • External Agency Partners • Other	As needed until Strategic Plan is completed.	Jim Morrison or Everett Hinkley
Update FS Aviation Management Personnel	Update FS aviation management personnel on activities of the FS UAS Advisory Group.	• FS Aviation Management Personnel	Quarterly	Bob Roth

- Keeps advisory group members “on the same page”
- Inform USFS leadership; internal/external audiences



UASAG Communications Plan Activities


- Inform the agency about the UAS Advisory Group
 - Charter announcement letter to agency
 - Implement website for information dissemination
 - Develop guidance letters/policy documentation
- Reaffirm leadership intent for UAS
 - Engage agency leadership
 - Develop UAS strategic plan/vision statement
- Getting USFS RAO and RASM “buy in”
 - Conducted briefings during summer 2012
 - Understand that UAS is rapidly affecting the agency
 - Unanimously support the work of Advisory Group

UASAG Observation/Mission Requirements Survey

- Conduct survey among deputy/staff areas of agency
 - Identify current observation gaps and other technical needs
 - Considerations:
 - Platform requirements (HALE, MALE, LALE, LASE, etc.)
 - Sensor requirements (spatial resolution, spectral channels, etc.)
 - Observation frequency
 - Data latency
 - Etc.
 - Compile and summarize survey results by early CY2013



UASAG Observation/Mission Requirements Survey

 **Unmanned Aerial System (UAS) Mission--INA**

4. Mission Requirements

1. What features do you need to detect, classify, or identify?

For clarification regarding any of the questions on the survey, or for general technical assistance, please contact Tom Zgowski (tazgowski@rsa.mil) or Adrian Groll (agroll@rsa.mil) at the Remote Sensing Applications Center (RSAC).

2. What type of sensor(s) will meet your mission requirements? (Check all that apply)

☐ Video Electro Optical
☐ Video Infrared
☐ NADIR Imagery
☐ Oblique Imagery
☐ Radar
☐ Lidar
☐ Other (please specify)

3. What data products will meet your mission requirements? (Check all that apply)

☐ Real-time video
☐ Ortho-corrected imagery
☐ Stereo Imagery
☐ Image mosaics
☐ KML/KMZ files
☐ Derived products, (please specify)

4. Keeping in mind that greater resolution increases costs associated with collecting, processing, and storing data, what is the image resolution requirement for your mission?

☐ Sub centimeter
☐ ≤ 4 inches, 10 cm
☐ ≤ 8 inches, 15 cm
☐ ≤ 12 inches, 20 cm
☐ ≤ 20 inches, 50 cm
☐ 1 meter
☐ Other (please specify)

5. What are the required timeframe(s) for your derived data requirements?

☐ Near Real-time (< 10 minutes)
☐ ≤ 1 hour
☐ ≤ 24 hours
☐ ≤ 48 hours
☐ ≤ 1 week
☐ ≤ 2 to 3 weeks
☐ ≤ 1 month
☐ Other (please specify)

6. How much time do you typically have between identifying the need for data or service and having the mission flown?

☐ Immediate (aircraft should be on standby)
☐ ≤ 24 hours
☐ ≤ 48 hours
☐ ≤ 1 week
☐ ≤ 2 weeks
☐ ≤ 1 month
☐ Seasonal (Project Plans developed and approved months in advance)
☐ Other (please specify)

7. What is the nominal endurance for your mission?

☐ ≤ 30 minutes
☐ ≤ 1 hour
☐ ≤ 2 hours
☐ ≤ 4 hours
☐ ≤ 6 hours
☐ ≤ 12 hours
☐ ≤ 24 hours
☐ Don't know
☐ Other (please specify)

8. What is the size of the area you would typically image?

☐ ≤ 5 acres
☐ 6-10 acres
☐ 11 - 100 acres
☐ 101-1000 acres
☐ 1001-10000 acres
☐ > 100000 acres
☐ Other (please specify)

9. How much of the study area will be imaged?

☐ Points within the area
☐ Wall to wall coverage
☐ Linear features (i.e., road network)
☐ Transsects
☐ Other (please specify)

For clarification regarding any of the questions on the survey, or for general technical assistance, please contact Tom Zgowski (tazgowski@rsa.mil) or Adrian Groll (agroll@rsa.mil) at the Remote Sensing Applications Center (RSAC).

EXAMPLE: An example of a mission data product from the Road Damage scenario might be a map that identifies the location of all road damage features.

EXAMPLE: Unknown, could involve entire length/width of forest. Most likely high resolution satellite imagery and/or stream gauges would be used to identify areas of possible damage to be inspected with higher resolution imagery from UAS.

1. What features do you need to detect, classify, or identify?

For clarification regarding any of the questions on the survey, or for general technical assistance, please contact the Remote Sensing Applications Center (RSAC).

2. What type of sensor(s) will meet your mission requirements? (Check all that apply)

- ☐ Video Electro Optical
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☐ Other (please specify)

3. What data products will meet your mission requirements? (Check all that apply)

- ☐ Real-time video
☐ Ortho-corrected imagery
☐ Stereo Imagery
☐ Image mosaics
☐ KML/KMZ files
☐ Derived products, (please specify)

4. Keeping in mind that greater resolution increases costs associated with collecting, processing, and storing data, what is the image resolution requirement for your mission?

- ☐ Sub centimeter
☐ ≤ 4 inches, 10 cm

- 4 part survey
- Completed once for each potential mission
- http://www.surveymonkey.com/s/UAS_INA

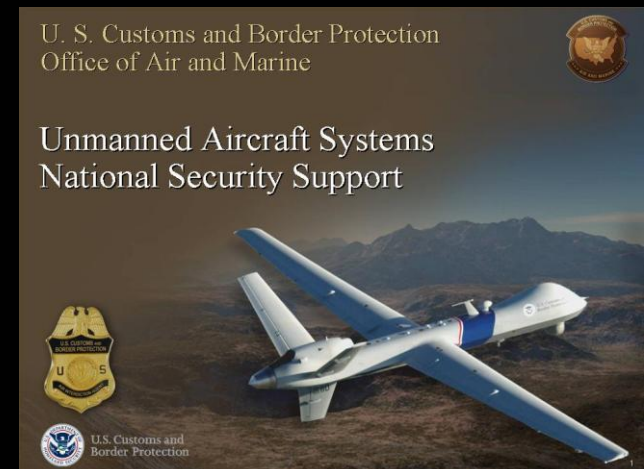
UASAG-External Agency Knowledge Transfer

- Learn from established UAS programs (NASA, USGS, NOAA, etc.)
 - Strategic planning
 - Mission requirements/protocols
 - Coordinate on common interests/goals
- Invite SMEs to participate on UAS Advisory Group
 - Interest and participation by government representatives is welcomed



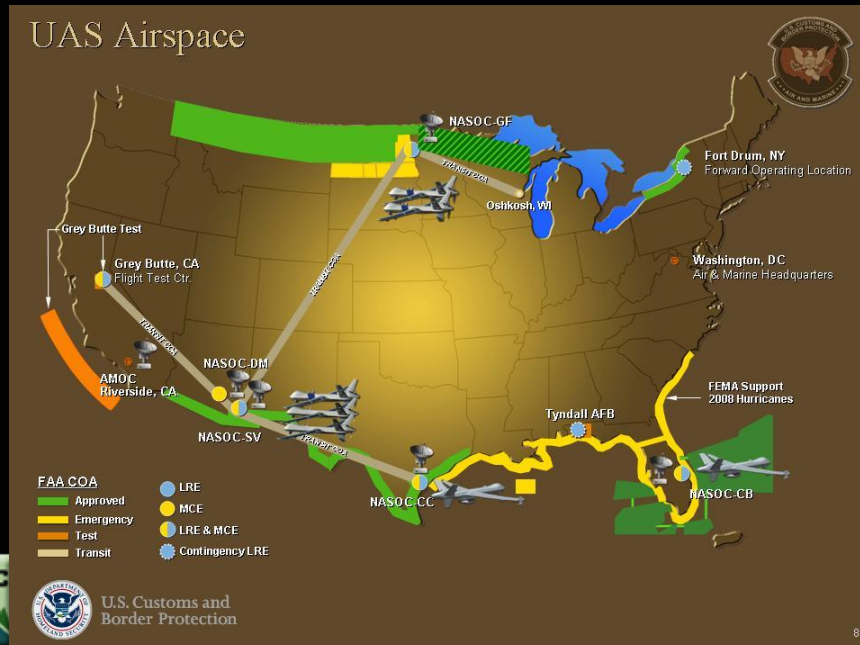
UASAG-External Agency Collaboration

- Collaborate with UAS research agencies/organizations
 - NASA, universities, etc.
- Collaborate with operational UAS programs
 - DHS/CBP, USGS, DOI OWF, etc.
- Establish formal partnerships to meet mutual objectives
 - MOAs/MOUs
- Develop protocols and procedures for engagement



Collaboration Opportunities With CBP

- Leverage CBP Predator UAVs
 - Tactical fire monitoring support
 - Law enforcement activities



UASAG UAS Mission SOPs/Protocol Development

- Identify and recommend two potential projects
 - Forest health
- Protocol development by going through the process and documenting
- Conduct UAS mission from top to bottom
 - USFS Aviation Management coordination/approval
 - Risk assessments by UAV type
 - COA requests
 - PASP development





Thanks

Comments/Questions?

Bob Roth

Advisory Group Chairman

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