

# NM Legislature Science, Technology and Telecommunications Committee



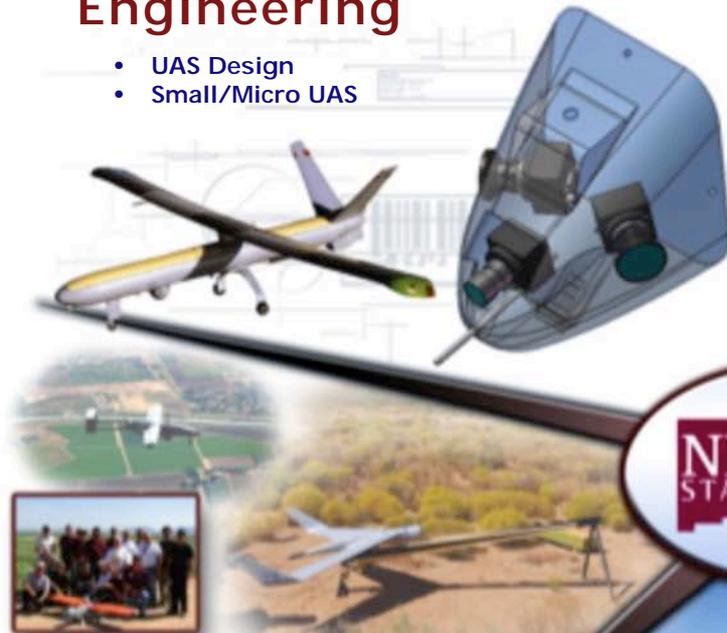
# NMSU UAS FTC Program Work Areas

## RDT&E/ Engineering

- UAS Design
- Small/Micro UAS

## Flight Test Center

- UAS FTC
- Data Collection
- Flight Ops
- Facilities



## Demonstrations

- Weather: TAMDAR
- Science: USGS and BLM
- BAT III Data
- ATDSS III
- Flight Demonstrations

## Human Factors

- Trust in Automation
- Control Reversals
- Work Load

## Regulatory

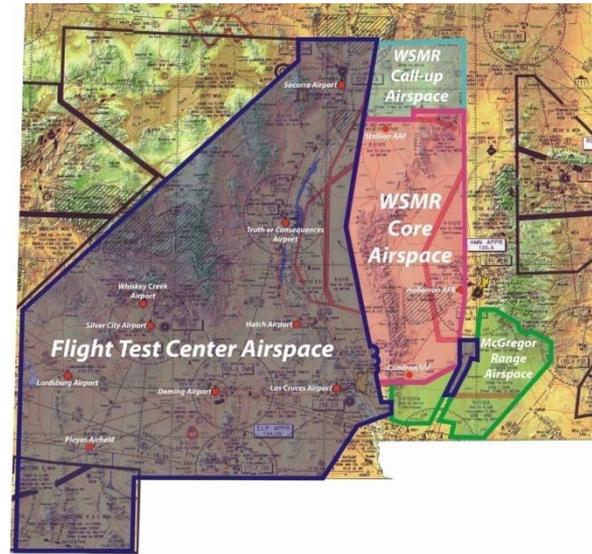
- Propulsion Test Lab
- Component Test Lab
- Arctic Airspace Analysis
- Flight Procedures
- SAA Research



# UAS FTC Current Airspace

## Civil Applications

- Disaster Assessment & Recovery
- Infrastructure Monitoring
- Natural Resource Monitoring
- Environmental Monitoring
- FAA UAS Safety Cases
- Concept of Operations Development and Validation



## 15,000 Square Miles of Airspace

- Exceptional Weather and Visibility
- Sparsely Populated
- 7 Airstrips, Plus Expeditionary Sites
- We share Call-up Areas

## Enabling Testing For:

- UAS OEM
- Payload and Sensor OEM
- Service Providers
- Data & Image Network Developers

# NMSU SME Support

- **FAA UAS Procedures and Standards Validation**
- **UAS Requirements Development**
- **UAS Selection**
- **COA Drafting**
- **Section 333 Assistance**
- **Government and LEA SME Support**
- **Government/Civil UAS Research Flights**
- **Sensor Testing & UAS Application Research Flights**
- **Procedure Development and Validation**

# NMSU UAS Pictures



# UAS (System) Diagram

## Unmanned Aircraft



Up Links -  
Down Link

**GCS: Pilot/Payload  
Operator Control**

**Base Station/Communications  
System**



# Why UAS? Dull, Dirty and Dangerous



Chernobyl: 1986



Fukushima: 2011

**Cost Effective!**

**Proliferation Explosion - Government  
Commercial & Personal**

# UAS TOOL - Right Tool for the Right Job

## Not All UAS even Types are the Same

BAT 3



Hornet Maxi



Aeryon Scout

B-100

Orbiter



NMSU Aerostar UAS



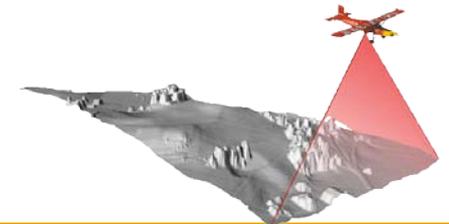
eBee



# Sensor is Important – UAS Taxi to get it to Location

## Sensor Types

- Camera - Photogrammetry
- Infra Red/Thermal
- Radars
- SAR
- Hyper-spectral
- Multi-spectral
- LiDaR
- Other

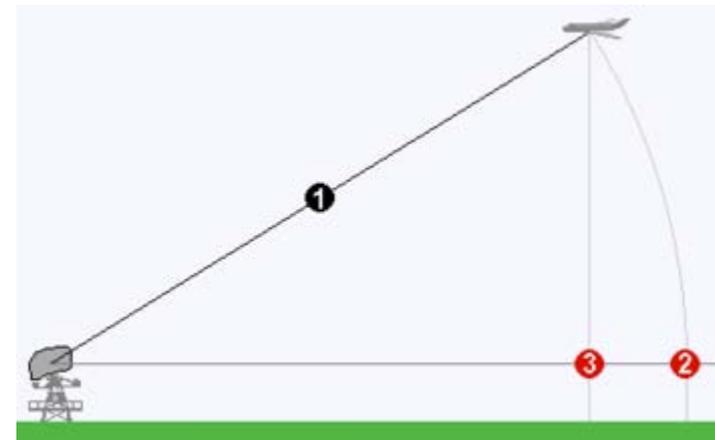


# Payload Field of View

Overhead



Slant Angle



## Factors – Abilities (Gimballed (# of Axis or Fixed))

Sensor

Video

SAR-LIDAR-XRAY

RF Communications

WI-FI

Slant Angle

High Definition

Look through

RF – ID or Conversation recording

Computer hacking

Zoom Capability

Optical-Digital

Disturbance or Depth

# FAA UAS Regulations

- Federal
  - DOI, DOJ, and DOD use MOU/MOA
- Public - State
  - Universities, Law Enforcement
  - State Departments, Divisions & Offices
- Commercial
  - Special Airworthiness Experimental
  - Type Certificate
  - 333 Business
- SUAS Rule



# UAS & NM Economic Development

## New Jobs for the New Norm

- NM Already has aircraft industry
- NMSU is FAA UAS COE Member
- UAS FTC designed for larger/longer/faster UAS testing w/15,000 sqmi
- ARCA UAS Manufacturer
- Great Flight Test Weather
- National Labs designing airborne sensors
- Space Port America
- WSMR restricted airspace
- Universities to train new workforce
- Very Good University Research Programs
- State, County, City & Commercial UAS OPs
- **Hi-tech good paying jobs!**

# Proposed State UAS Organization

State  
Governor

State  
Legislature

State UAS  
Lead  
Organization

State of New  
Mexico  
Departments,  
Divisions, &  
Offices

NMSU UAS  
Subject  
Matter  
Experts

2 FTEs

State  
Committees

## SME's Support

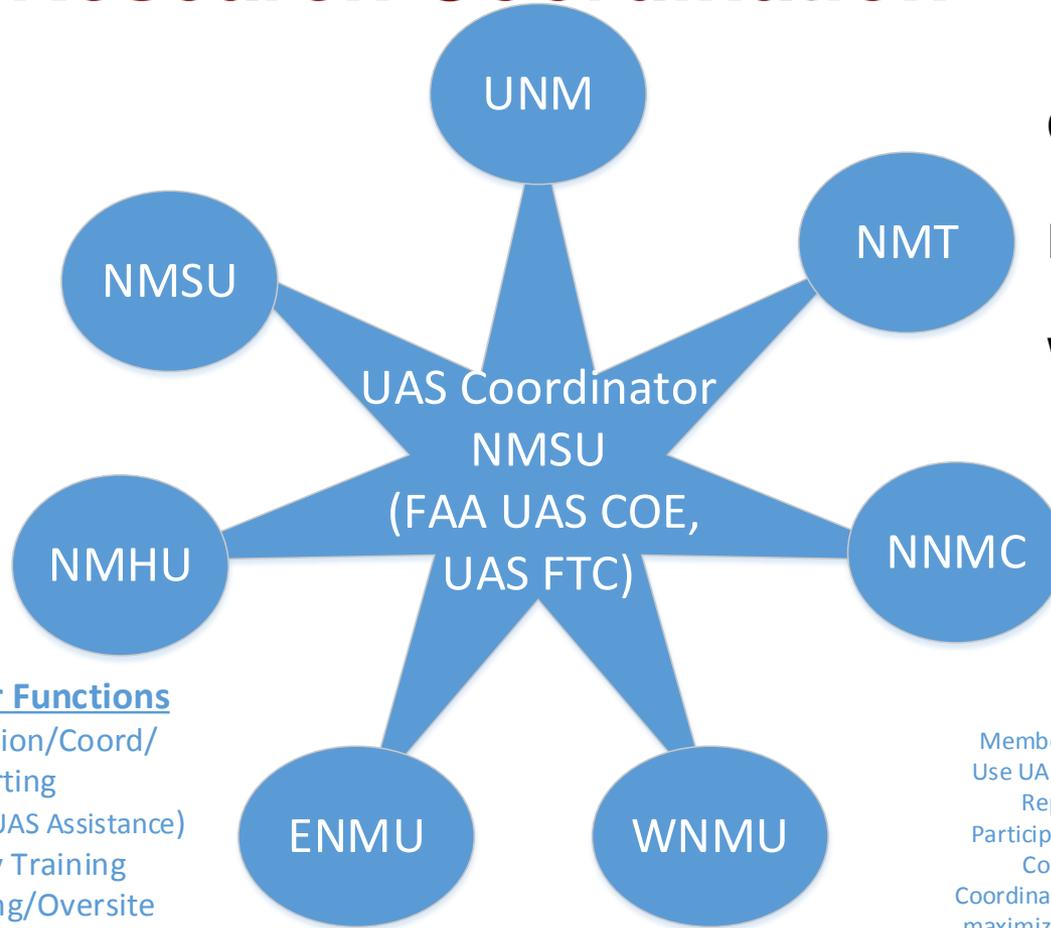
- UAS Requirements, Sensor, & UAS (Determination assistance/training)
- UAS Cost Analysis Support – UAS/Sensor
- UAS and Sensor Selection
- Proof of Concept Flights
- UAS and Sensor Selection
- Concept of Operations Support
- FAA Regulations

## SME Support

- FAA Regulations Support
- Subject Matter Experience & knowledge
- UAS Airworthiness Requirements (Policy Recommendations & individual aircraft)
- Research and Coordination

# State of New Mexico University Proposed Research Coordination

FAA Regulations  
 UAS Flight Ops  
 Flight Data Reporting  
 Correct UAS Selection  
 Flight Plan & Validation  
 Flight Coordination & Safety



Chooses Research  
 Performs & Publishes  
 Works in concert w/other State schools where appropriate

## Coordinator Functions

FAA- Regulation/Coord/Reporting  
 (Airworthiness -UAS Assistance)  
 UAS Safety Training  
 FAA Reporting/Oversite  
 Research Meetings-  
 (Reduce overlap – expand research effectiveness)

Member School Functions  
 Use UAS within Regs/Safely  
 Report Flight Data  
 Participate in UAS Research  
 Conduct Research  
 Coordinate Research Efforts to maximize funds and research

# Point Of Contact

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