SECRETARY OF PUBLIC SAFETY AND HOMELAND SECURITY

Unmanned Systems: Threats and Opportunity

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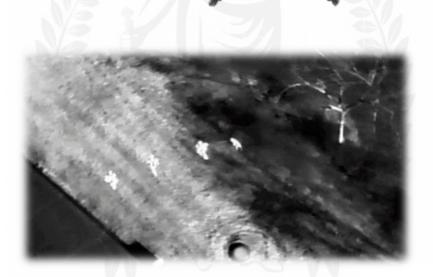
TRAVIS HILL

OPPORTUNITY

- Explosive growth, 2.2M today and 7M by 2020 and $11B

- Technology advancement provides access to inexpensive, capable, and easy to operate aerial systems

- Diverse payloads:
  - Video, still photography, microphones
  - Infrared/nigh vision cameras
  - Radiological/chemical detectors

- Extensive uses:
  - Search and rescue with night vision
  - Hazardous materials scene characterization
  - Rapid scene documentation/reconstruction

CURRENT USES

- Department of Emergency Management established their formal program Fall 2017:

  - Operates 7 systems throughout the commonwealth using 15 operators

  - Formal training program and policy

  - Training includes initial and recurring hours to maintain currency

- Conducted a number of missions including:

  - Hazardous materials incident response

  - Search and rescue

- VDOT is building a program to support Virginia State Police in traffic accident scene documentation

THREAT

- Able to employ the same payloads, carry contraband

- Many of our facilities do not consider aerial threats into security planning

- Easily purchased, built, and modified

- Potential uses:

  - Delivery of contraband

  - Network sniffers/hacking tools

  - Surveillance and reconnaissance: video, audio, photography

  - Weaponized: delivery of homemade/military grade explosives, liquids

Source: ISIS: Deploying Unmanned Aerial Vehicles, NJ Fusion Center

Drones become latest tool drug cartels use to smuggle drugs into U.S., The Washington Times

THREAT CASE STUDY – OKLAHOMA PRISON

- McAlester, OK-Oct 2015: UAS attempted aerial delivery, crashed once the operator struck portions of security fencing

- Guards visually identified the UAS approaching the facility

- Guards retrieved aircraft and contraband outside prison wall

- Payload included:

    - Hacksaw blades

    - Mobile phone with spare battery

    - Phone Hands free device

    - 5.3oz marijuana

    - ~1oz methamphetamine

    - Heroin

    - Super glue. cigarettes, cigars

[Reuters Article](#)

DETECTION AND COUNTER-UAS

- We can detect… however, counter UAS technology is limited: jamming and kinetic

- A number of detection technology exists today for both fixed and mobile applications:

  - Enabled by software analysis, layered technology likely more accurate (ex/ coupling RF detection with video analysis)

  - Radar, Video

  - Radio frequency detection

- Some systems can identify location of controller allowing authorities to interdict

- However, counter UAS capabilities are limited: jamming and kinetic capabilities violate federal code

  - ❖ Recent FAA Reauthorization Act authorizes US DOJ and DHS to research potential counter UAS solutions

DRONE SECURITY
- First fully functional mobile drone security system
- Perfect for special events, search and rescue, law enforcement and critical infrastructure protection
- Trailer adds a long-range EO/IR camera and spectrum sensing capability

EO/IR Camera
S1200 Spectrum Sensors
R1400 Radar
GRYPHON SENSORS

France is Training Eagles to Kill Drones

UAS Magazine

Efforts to Leverage Technology

GOAL: IMPLEMENT WHILE PROTECTING PRIVACY AND CIVIL RIGHTS

- Established a Sub-Panel for UAS under the Secure and Resilience Commonwealth Panel: Investigate potential uses, develop model policies and training requirements

- Virginia Dept of Aviation is leading a Working Group: portion of this study will outline potential uses for federal, state, and local government agencies – public safety and beyond

- Center for Technology established a Center for Unmanned Systems: will collaborate on public safety research.

- The Mid-Atlantic Aviation Partnership hosted by Virginia Tech was selected by the FAA as a UAS Integration Pilot Program center: researching package delivery, beyond the line of sight operations, and beyond. Public safety will benefit from their advanced research.

Secure and Resilient Commonwealth Panel reconvenes the UAS Sub-Panel to discuss and investigate how to leverage the technology to improve public safety operations.

QUESTIONS?

The Virginia Department of Emergency Management deploys a number of UAS for search and rescue, hazardous material scene characterization, and to conduct damage assessments.

These photos were collected remotely using a UAS following major flooding related to Hurricane Michael. The UAS allowed responders to verify the safety of our public while assessing extent of damages.