



New C2 Technologies for Police Taking GMU Drones to a New Level

Spring 2024

**Congratulations
C5I
for 35 years**



A black and white photograph of a microphone positioned over a piano keyboard. The image is heavily blurred, creating a bokeh effect with light spots in the background. A solid blue overlay covers the bottom half of the image. The text "WHO AM I?" is written in large, bold, black capital letters across the middle of the image, partially overlapping the blue area. A short horizontal line is positioned below the text.

WHO AM I?



Applications of Drones for Use in Public Safety Investigations





“The only limitation to the use of drones in public safety is your own imagination “

GMUPD Chief Carl Rowan



The use Drones is not
something new





Gaspard-Felix Tournachon,
NADAR 1858
First photo

First Aerial Images
taken in the U.S. were
taken 10/13/1860 by
James Black in a
Balloon

- Boston





Basilef
molt 1909
Kazm 1909

First UAV -1909

1909 Dresden International Photographic Exhibition



Progression of UAS Data Development



Taking Still Images or video



Mapping and Modeling



Combine with Terrestrial Scans (Point Clouds) such as Faro, Trimble, or Leica



Virtual Scenes, Sensors (LIDAR, Multispectral, Chemical(Hazmat), etc.)

By Show of hands.... How many
own or use drones

The global market for public safety drones
is expected to triple from \$1.1 Billion in
2022 to \$3.7 billion in 2032
Increase of 13% in 10years

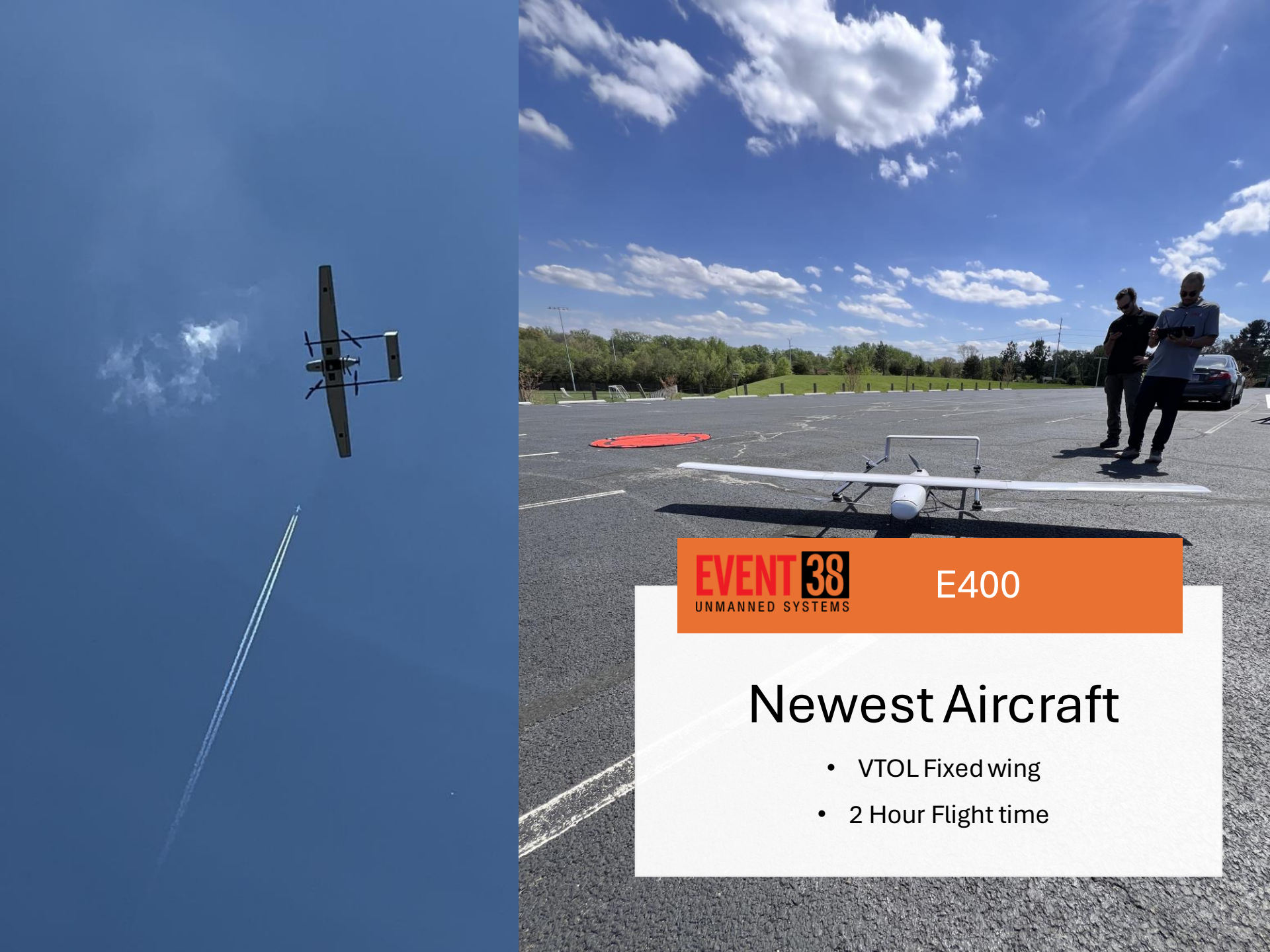


GMU UAS Team



- Mason Police UAS Unit
 - Formed January 2018
 - Combined Unit – 14 Part 107 Pilot, 25 Aircraft
 - Mason Police, City of Fairfax Fire/Police, Prince William County Fire, Baltimore City Crime Scene Unit,
- VDEM Region 7 UAS Team





EVENT 38
UNMANNED SYSTEMS

E400

Newest Aircraft

- VTOL Fixed wing
- 2 Hour Flight time

Public Safety UAS Mission

- Capturing Images/Video
 - Multiple sensors
- Natural Disaster observation
- Accident reconstruction
- Crime Scene Documentation
- Mapping of area
- Fireground
- Overwatch
- SAR
- Delivery of rescue items
 - Organs
 - Food
 - Flotation
 - Drugs
 - AED





DFR/cUAS

DFR

Drone as A First Responder



Background

- The concept of Drones as a First Responder allows agencies to put eyes on an event prior to a public safety entity arriving at a scene.
- A drone can be launched immediately after receiving the call and provide exact location and overwatch to responding entities. A live feed from the event can be fed to any authorized phone, tablet, or computer. The aircraft will be piloted remotely. This concept is being tested by Public Safety departments in the US and the FAA has already given waivers for pilot programs

Benefits

- Improved Situational Awareness and safety to the public Faster response time by Public safety Units- Quick Response
- Reduce costs due to more efficient use of scarce assets
- Reduce traffic congestion
- Open the roadways up faster
- Reduce the potential of collateral accidents (gawkers, etc)
- Better documentation of incidents



Hazards for a DFR Program

- **AIRSPACE**
- Flight Operations over people
- **BVLOS**
- Weather (Wind)
- Battery Fires
- Loss of Communications
- Day/Night



Legal Restrictions

Use of Drones by
Public Safety



• Va Legal Requirements

§ 19.2-60.1. Use of unmanned aircraft systems by public bodies; search warrant required.

A. As used in this section, unless the context requires a different meaning:

"Unmanned aircraft" means an aircraft that is operated without the possibility of human intervention from within or on the aircraft.

"Unmanned aircraft system" means an unmanned aircraft and associated elements, including communication links, sensing devices, and the components that control the unmanned aircraft.

B. No state or local government department, agency, or instrumentality having jurisdiction over criminal law enforcement or regulatory violations, including but not limited to the Department of State Police, and no department of law enforcement as defined in § 15.2-836 of any county, city, or town shall utilize an unmanned aircraft system except during the execution of a search warrant issued pursuant to this chapter or an administrative or inspection warrant issued pursuant to law.

C. Notwithstanding the prohibition in this section, an unmanned aircraft system may be deployed without a warrant (i) when an Amber Alert is activated pursuant to § 52-34.3; (ii) when a Senior Alert is activated pursuant to § 52-34.6; (iii) when a Blue Alert is activated pursuant to § 52-34.9; (iv) where use of an unmanned aircraft system is determined to be necessary to alleviate an immediate danger to any person; (v) by a law-enforcement officer following an accident where a report is required pursuant to § 46.2-373, to survey the scene of such accident for the purpose of crash reconstruction and record the scene by photographic or video images; (vi) by the Department of Transportation when assisting a law-enforcement officer to prepare a report pursuant to § 46.2-373; (vii) for training exercises related to such uses; (viii) if a person with legal authority consents to the warrantless search; or (ix) by a law-enforcement officer to (a) aerially survey a primary residence of the subject of the arrest warrant to formulate a plan to execute an existing arrest warrant or capias for a felony offense or (b) locate a person sought for arrest when such person has fled from a law-enforcement officer and a law-enforcement officer remains in hot pursuit of such person.

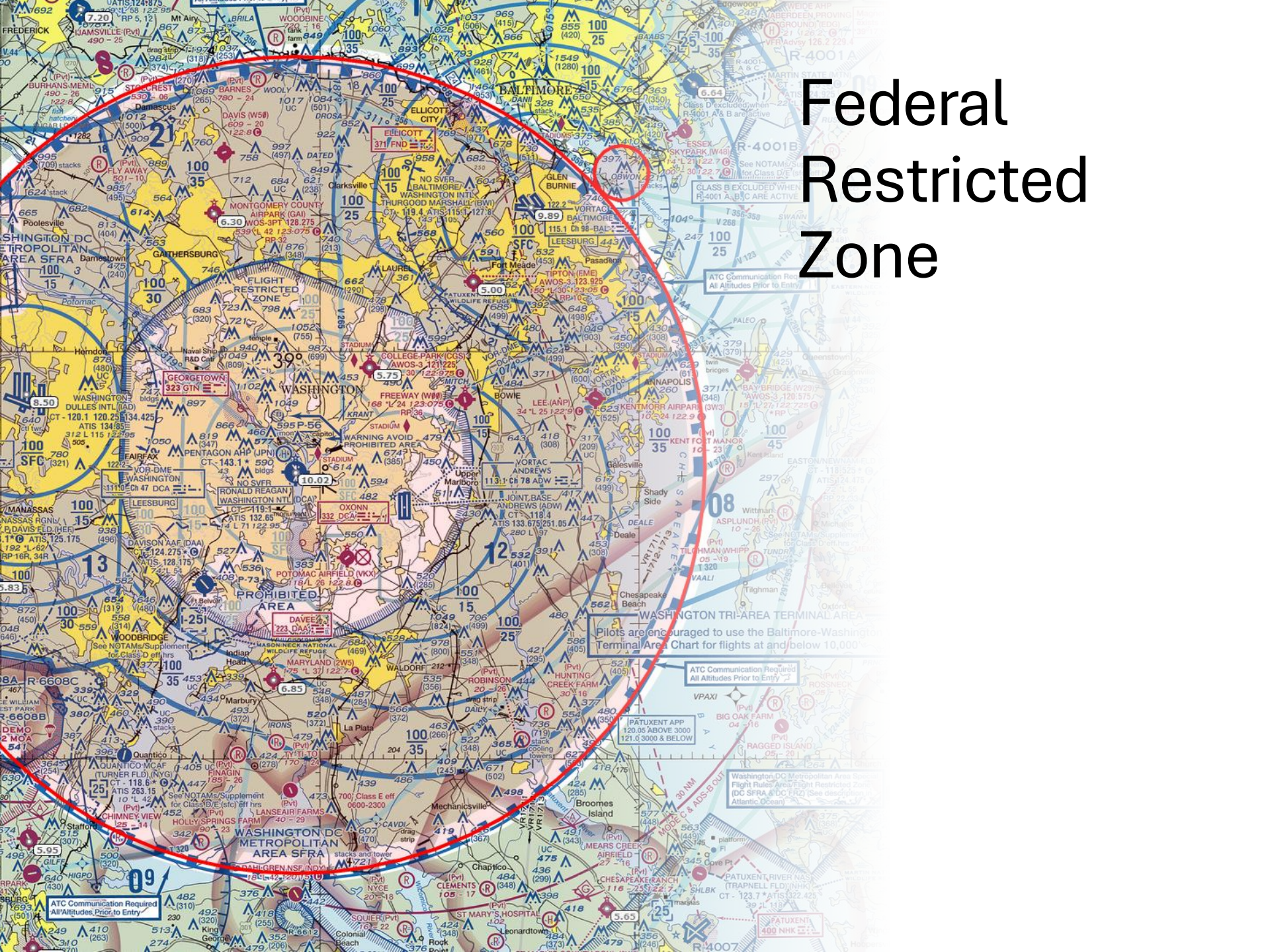
D. The warrant requirements of this section shall not apply when such systems are utilized to support the Commonwealth or any locality for purposes other than law enforcement, including damage assessment, traffic assessment, flood stage assessment, and wildfire assessment. Nothing herein shall prohibit use of unmanned aircraft systems for private, commercial, or recreational use or solely for research and development purposes by institutions of higher education and other research organizations or institutions.

E. Evidence obtained through the utilization of an unmanned aircraft system in violation of this section is not admissible in any criminal or civil proceeding.

F. In no case may a weaponized unmanned aircraft system be deployed in the Commonwealth or its use



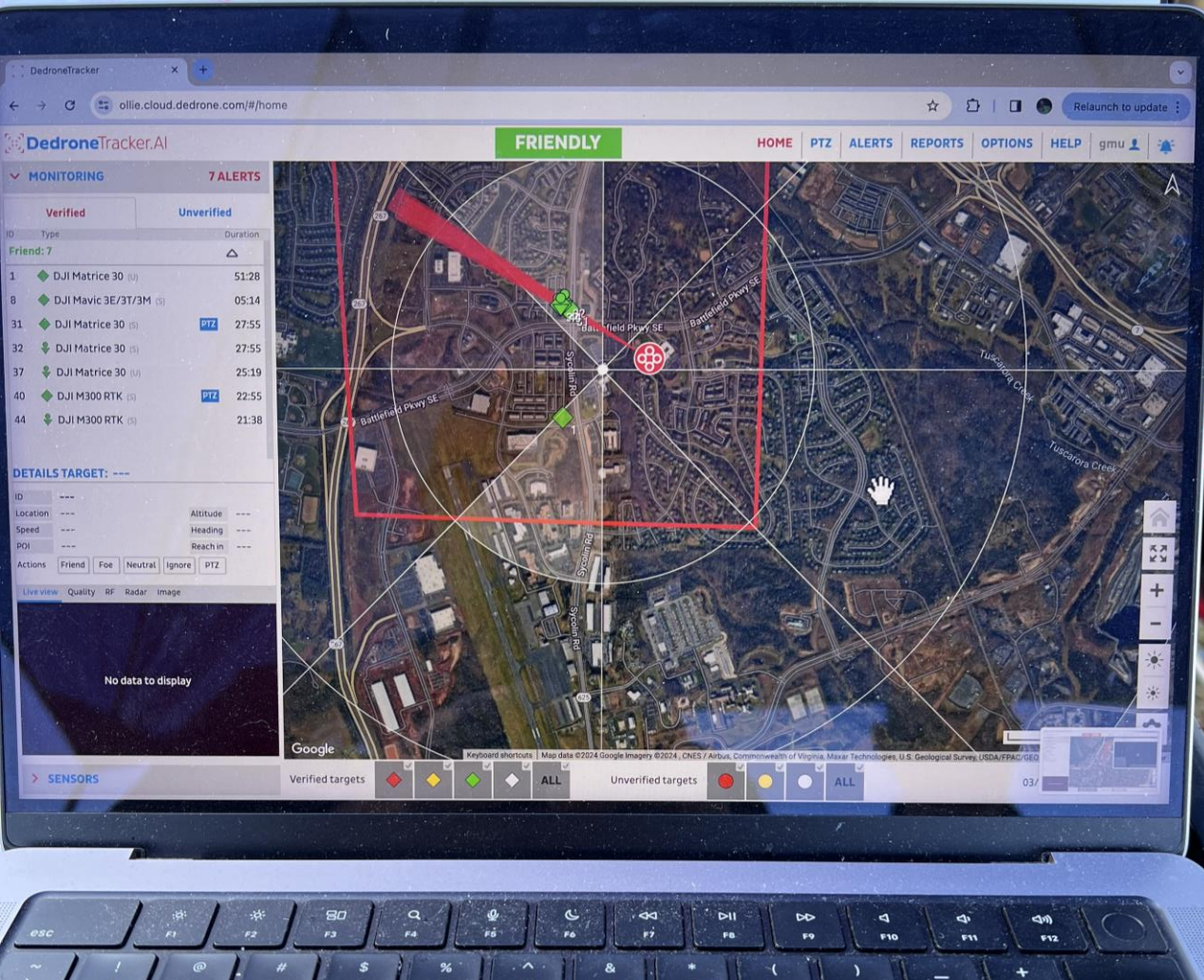
Federal Restricted Zone





BVLOS

BEYOND VISUAL
LINE OF SIGHT



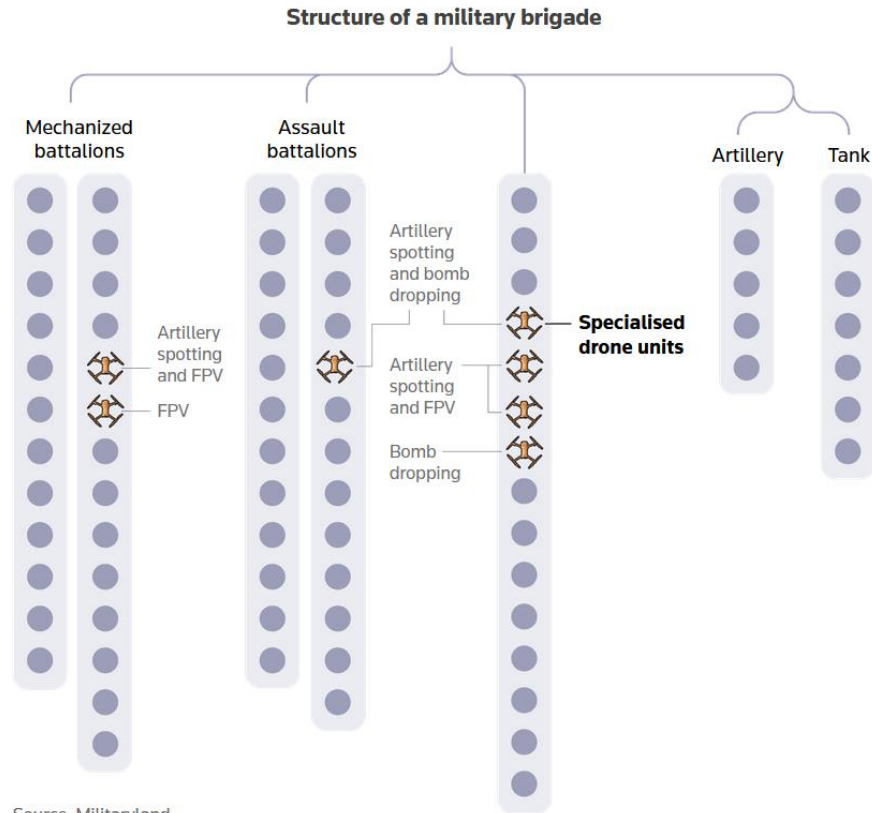
Counter UAS Systems

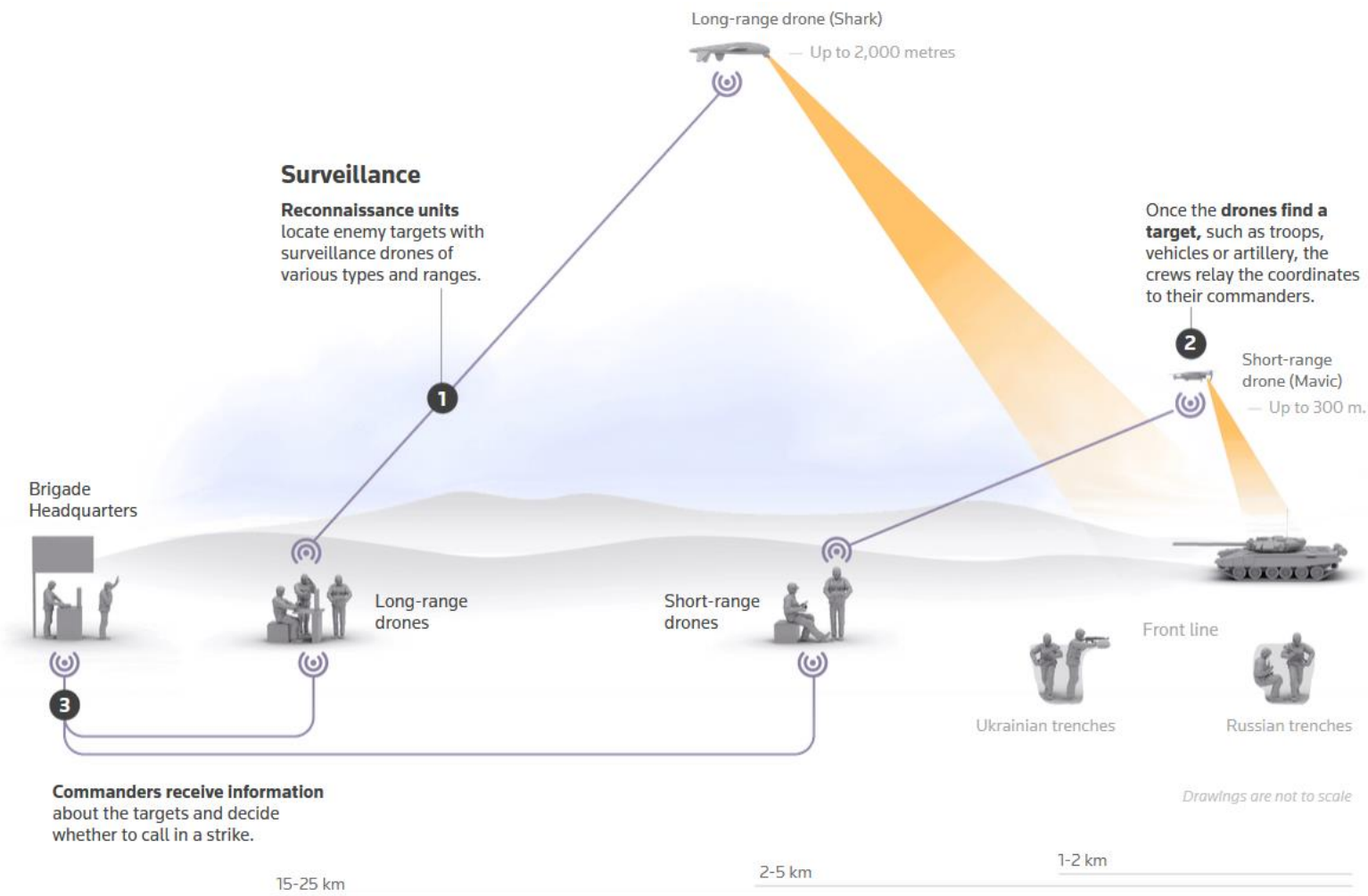
CUAS = Domain Awareness



Ukrainian Military Brigade, Source Reuters

Reuters reports that the Ukrainian government plans to make one million FPV drones in 2024







C5I Center of Excellence is catalyzing GMU PD and Regional Assets Progress in DFR and cUAS



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**Congratulations
C5I**

**Hope to see you in
another 35 years**



Thank You



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