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Drones in Modern Conflict: Governance Challenges and Pathways

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VCDNP

December 10, 2025



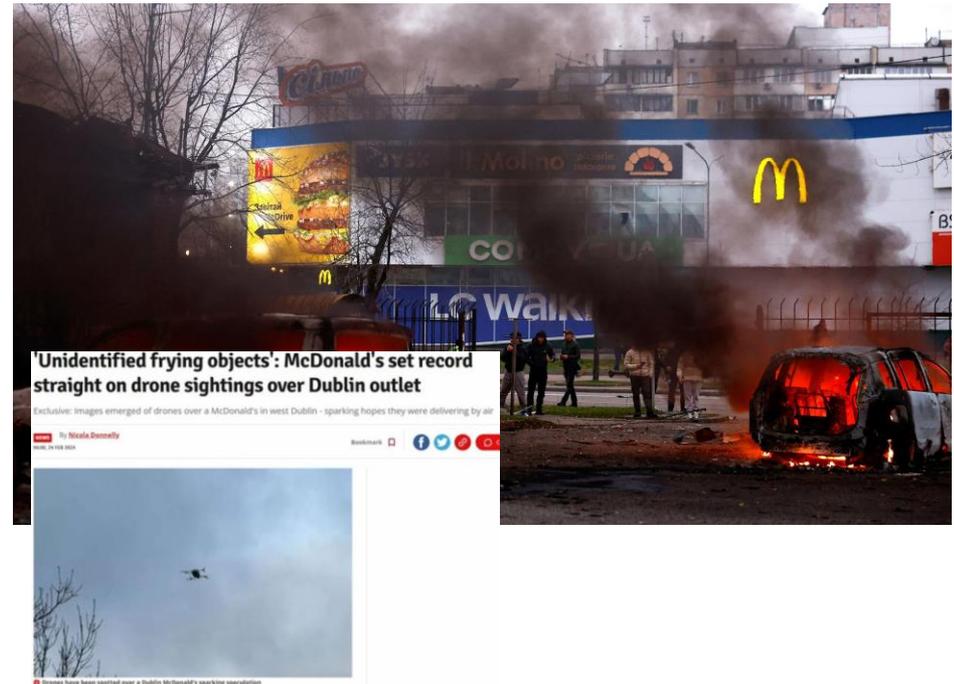
Daily Drone Headlines:

Russian drone strike kills one near Kyiv as peace talks resume in the US

Russian drone and missile attacks kill two in Kyiv • FRANCE 24 English

Ukraine LIVE: Russian Drone Attack Injures At Least 32 in Kharkiv, Buildings Burn | N18G

Ukrainian drones strike airbases across Russia destroying dozens of warplanes| BBC News





What We'll Cover

- I. Introduction - Brief History and Background**
- II. Types and Uses**
- III. Killing with Drones**
- IV. Ukraine, Russian Federation**
- V. Post Ukraine**
- VI. Regulations, International and Domestic**
- VII. Privacy**

Goal - Hit the high points and leave references



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What's a "Drone"?

Our focus in this talk is primarily on airborne "Drones"



Definitions and Terminology

- **Remotely Piloted Aircraft (“ RPA”), Remotely Piloted Vehicles (“ RPV”), Remotely Piloted Air System (“RPAS”), Unmanned Aircraft (“ UA”), Unmanned Aerial Vehicle (“ UAV”), Unmanned Aerial System (“UAS”), and now Uncrewed Aerial System (“UAS”)**
- **All are used somewhat interchangeably with “Drone”**
- **Is a cruise missile a drone?—Thinking about issues such as the Missile Technology Control Regime (MTCR)**



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**Drones are
not a new concept**



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1918



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Vietnam Era



1849



- **Even Older Stuff and things that don't fly**
 - **Fire Ships**



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Drones

Types and Uses



Categorization of UAVs

- **Military**
- **Civilian**
- **Typically categorized by takeoff weight (and sometimes payload weight), speed, range, and altitude capability**
- **Dual Use (see Ukraine)**



Unmanned Aircraft Systems Categorization Chart

UA Category	Maximum Gross Takeoff Weight (lbs)	Normal Operating Altitude (ft)	Speed (KIAS)	Representative UAS
Group 1	0-20	< 1200 AGL	100 kts	WASP III, TACMAV RQ-14A/B, Buster, Nighthawk, RQ-11B, FPASS, RQ16A, Pointer, Aqua/Terra Puma
Group 2	21-55	< 3500 AGL	< 250	ScanEagle, Silver Fox, Aerosonde
Group 3	< 1320	< 18,000 MSL	< 250	RQ-7B Shadow, RQ-15 Neptune, XPV-1 Tern, XPV-2 Mako
Group 4	> 1320		Any Airspeed	MQ-5B Hunter, MQ-8B Fire Scout, MQ-1C Gray Eagle, MQ-1A/B/C Predator
Group 5	> 1320	> 18,000 MSL	Any Airspeed	MQ-9 Reaper, RQ-4 Global Hawk, RQ-4N Triton

Legend

AGL above ground level
 FPASS force protection aerial surveillance system
 ft feet
 KIAS knots indicated airspeed
 kts knots

lbs pounds
 MSL mean sea level
 TACMAV tactical micro air vehicle
 UA unmanned aircraft
 UAS unmanned aircraft system



Why Use Drones?

- **Safety?**
- **Endurance?**
- **Cost?**
- **Ability?**



Military and Intel Agency Uses

- **Surveillance (short and long range)**
- **Attack (various missions and weapons depending on the capability of the drone)**
- **Electronic warfare**
- **Defense against other drones, aircraft (swarming and Uncrewed Combat Aerial Vehicles (UCAVs))**



Government Uses

- **Border or Coastal Patrol - Counter Smuggling, Anti-Terrorism, and Port Security**
- **Law Enforcement** or Emergency Response - Forest Fires, Search & Rescue, SWAT, Fire Rescue
- **Surveillance**, Traffic, and Missing Persons



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Killing with Drones



Bush, Obama, Trump, Biden or Trump II - pick one or more that you love to hate and consider their use of drones for the following:

- **Tactical use by deployed troops (e.g. hand launched Raven)**
- **Intelligence gathering**
- **Targeted killing (some may be U.S. citizens) – thousands killed with no exact count or identification**
- **Recent Trump II destruction of “drug vessels” in Caribbean and Pacific**



U.S. Justification

- **What is the basis for U.S. claim that drone use in areas of world where we do not have consent of government**
- **Does consent even make it OK to use drones?**
 - Article 51 of the UN Charter**



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Killing with Drones (Ukraine and post - Ukraine)



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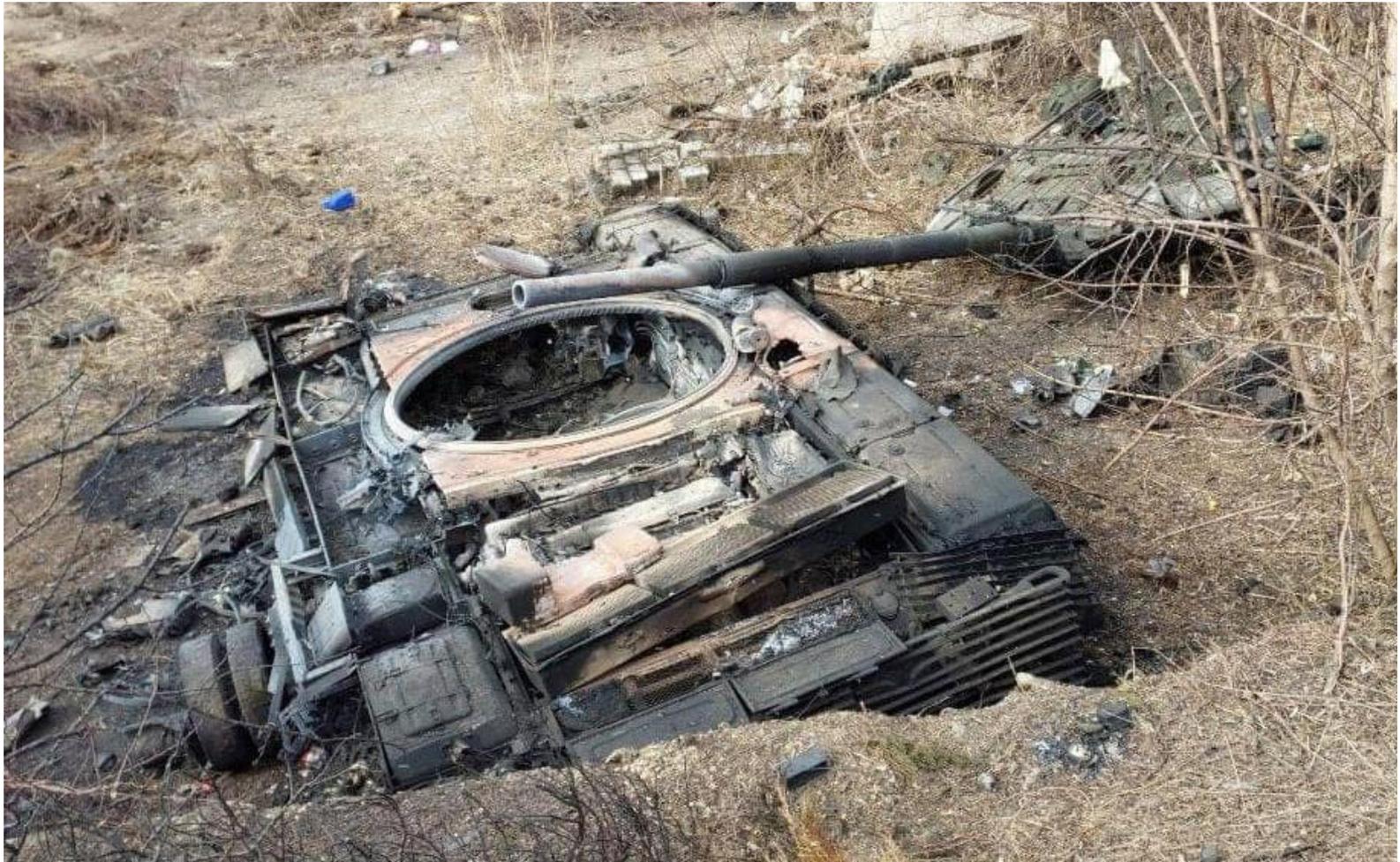
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Shahed-136 drone

Max range: 1,550 miles
(2,500km)

Max speed: 115 mph
(185 kmph)

Wingspan: 8.2 ft (2.5m)

Warhead weight: 66-110 lb
(30-50kg)





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<https://www.youtube.com/shorts/OjpP8yt-rR8?feature=share>

Shahed-136



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POPULAR MECHANICS

EVERY. SINGLE.
DRONE.

FIGHTING
IN THE SKIES
OVER UKRAINE

PLUS

HOW TO BUY A NEW
CAR OR TRUCK WITHOUT
GETTING CHEATED

THIS FANTASTIC
MEGA-STRUCTURE COULD
HELP YOU LIVE FOREVER

FAST-CHARGING,
POWERFUL, EV BATTERIES
ARE ON THE WAY



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<https://www.popularmechanics.com/military/a40298287/drone-fighting-ukraine-war-russia/>





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Only publicly known types. All illustrations provisional, approximate scale

Ukrainian Long-Range Attack Drones (OWA-UAVs)





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Palianytsia- Ukrainian long-range “missile drone.”

https://www.youtube.com/watch?v=jB_1gu87I9A





Neptune Missiles 1000 km range

Ukraine built – fired from tubes on a tel

<https://www.youtube.com/watch?v=a6f8mKj4j74>

MARCH 17, 2025







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- **Where do we go from Ukraine?**
- **Effects of AI**



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Country	Focus and Strengths	Global Role
United States	Advanced platforms and robust R&D; unmatched in reconnaissance and strikes.	Leads global market and sets benchmarks.
China	Cost-effective drones for domestic use and export.	Major exporters influencing global adoption.
Turkey	Innovative, affordable UAVs; strong exporter.	Recognized for reliable, budget-friendly drones.
Israel	Reliable and advanced drones; major exporter.	Key supplier in global military operations.
Russia	Heavy investment in UAVs to modernize the military.	Competing with global leaders.
India	Expanding drones for surveillance and defense.	Emerging as a regional power.
France	Reconnaissance and combat-focused innovation.	Strengthens European defense collaboration.
Australia	Focus on surveillance and autonomous systems.	A key player in Asia-Pacific security.
South Korea	Rapid progress in UAV tech and integration.	Enhances security posture in East Asia.
Germany	Stealth and versatile UAVs for European security.	Advances European defense capabilities.



Iran's ballistic and cruise missiles



Graphic: The Times and The Sunday Times
Source: CSIS Missile Defence Project, 2020





In July 2019, Houthi forces unveiled a collection of UAVs, which they claimed to have manufactured domestically. Eight types of Houthi-manufactured UAVs have been identified in media reporting: Hudhed-1, Raqib, Rased and Sammad-1 (Reconnaissance UAVs - although the Sammad-1 can be weaponised), and Qasef - 1, Qasef - 2K, Sammad - 2 and Sammad - 3 (Combat UAVs).



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Houthi-produced UAVs on display at an exhibition

in Sanaa, Yemen, 7 July 2019 @ Yemen Press



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Regulatory Issues



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Regulation is work in progress in many, if not most, states. In the U.S. for example, issues of who can regulate drone use, destroy drones, etc. are still undecided.



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International Regulation

International Civil Aviation Organization (ICAO)

**Works on UASs via ICAO Model UAS regulations
for states and via Advisory Circulars**

**[https://www.icao.int/UA/icao-model-uas-
regulations](https://www.icao.int/UA/icao-model-uas-regulations)**



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Control of Spread of Military Drones Done via export control systems and attempts to control proliferation of dangerous drone technologies via MTCR and the Wassenaar Arrangement



- **Domestic drone control is a “hodgepodge” with some regional controls (see European Union) but more often with each country creating its own regulations sometimes via its civil aviation structure, sometimes via other agencies.**
- **Domestic controls within a country can vary by sub-national regulations.**



- **What is typically regulated is: If, Where, How High can drones fly, flying in proximity to buildings and people, registration, communication, weight, can drones be flown out of view, can an operator fly multiple drones, night operations, etc.**
- **Who can protect against drones and/or destroy them**



A Good Overview Drone Laws by Country: 2025 Global Guide

<https://www.flyingglass.com.au/guide-to-drone-laws-by-country/#:~:text=Middle%20East,-The%20Middle%20East&text=Some%20countries%20such%20as%20the,security%20services%20well%20in%20advance>



U.S. Issues: Preemption of State and Local Aviation Regulations

- **Generally, state and local regulations of aviation safety, airspace management, and aviation noise are preempted by federal laws and regulations.**
- **E.g. in *City of Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624 (1973) the Supreme Court struck down a local city ordinance that prohibited planes from taking off during certain hours of the day as preempted by the federal regulatory scheme.**



U.S. Issues (cont'd)

- **Should the federal government regulate drone use beyond airspace control?**
- **Are states a better platform for experimentation with such regulation?**



U.S. Issues (cont'd)

- **A majority of states are actively considering drone-related legislation**
- **Law Enforcement Regulation vs. Regulation of Private Actors**
- **Texas Privacy Act = No photography w/o landowner's consent?**



U.S. Issues (cont'd)

- **Can states and political divisions (county, parish, city, etc.) ban drone use altogether?**



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Privacy Issues



- **Privacy – How do you feel?**
- **<http://abcnews.go.com/US/video/woman-charged-assaulting-teen-drone-24080389>**



Suggested U.S. Readings

Fourth Amendment Cases:

United States v. Causby 328 US 256 (1946)

California v. Ciraolo, 476 U.S. 207 (1986)

Dow Chemical Co. v. United States, 476 U.S. 227 (1986)

Florida v. Riley, 488 U.S. 445 (1989)

Kyllo v. United States , 533 U.S. 27 (2001)

Preemption Cases:

Singer v. City of Newton, 284 F.Supp. 3d 125 (2017)



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Mega Privacy Threats



- **Argus and Gorgon Stare – Really scary stuff. 1984 came and went, but Big Brother has new tools**
- **What about satellites?**

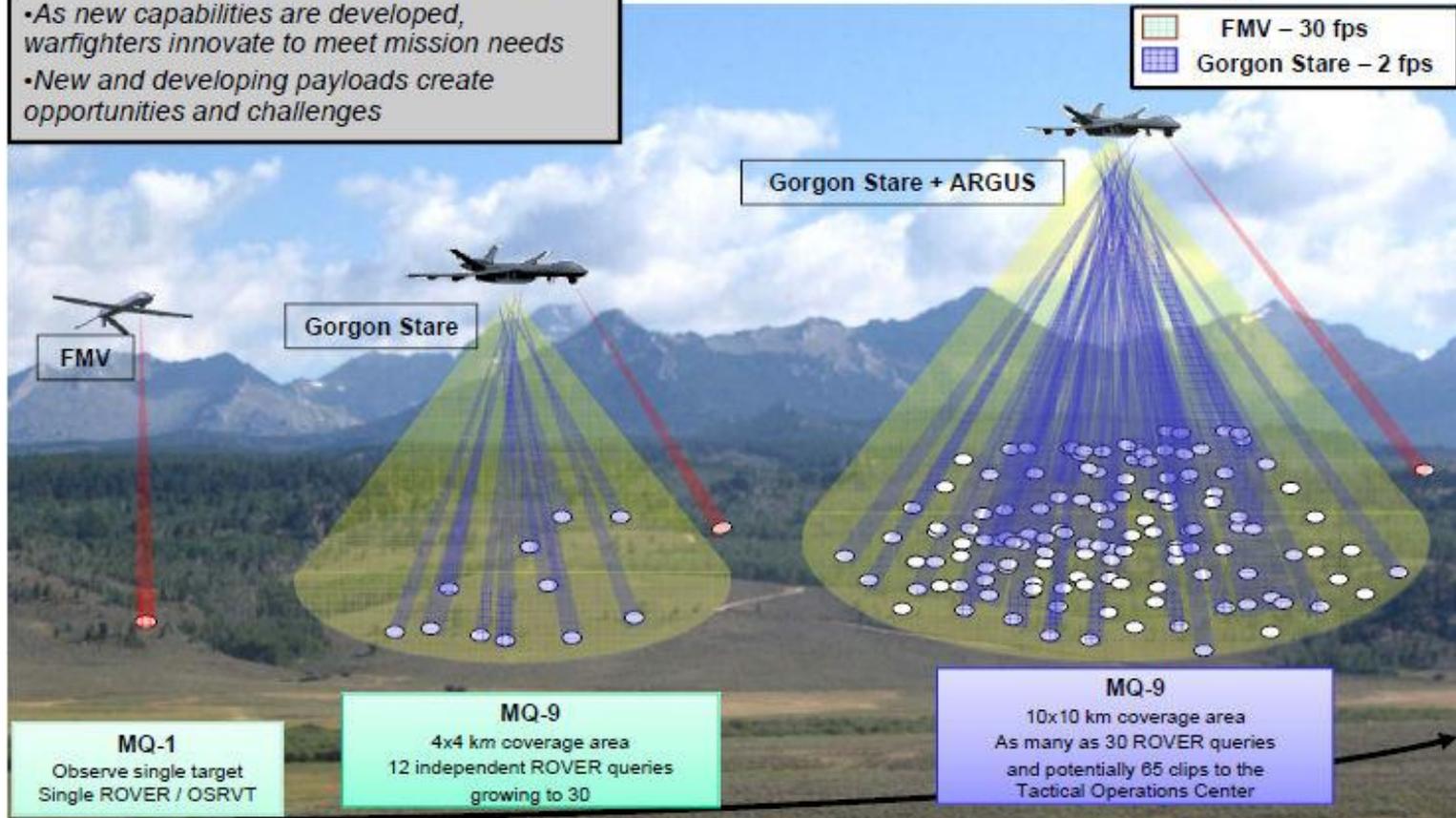




Wide Area Airborne Surveillance (WAAS)

- As new capabilities are developed, warfighters innovate to meet mission needs
- New and developing payloads create opportunities and challenges

 FMV – 30 fps
 Gorgon Stare – 2 fps



MQ-1
Observe single target
Single ROVER / OSRVT

MQ-9
4x4 km coverage area
12 independent ROVER queries
growing to 30

MQ-9
10x10 km coverage area
As many as 30 ROVER queries
and potentially 65 clips to the
Tactical Operations Center

Today

IOC 2nd Qtr FY10

4th Qtr FY11

GORGON STARE

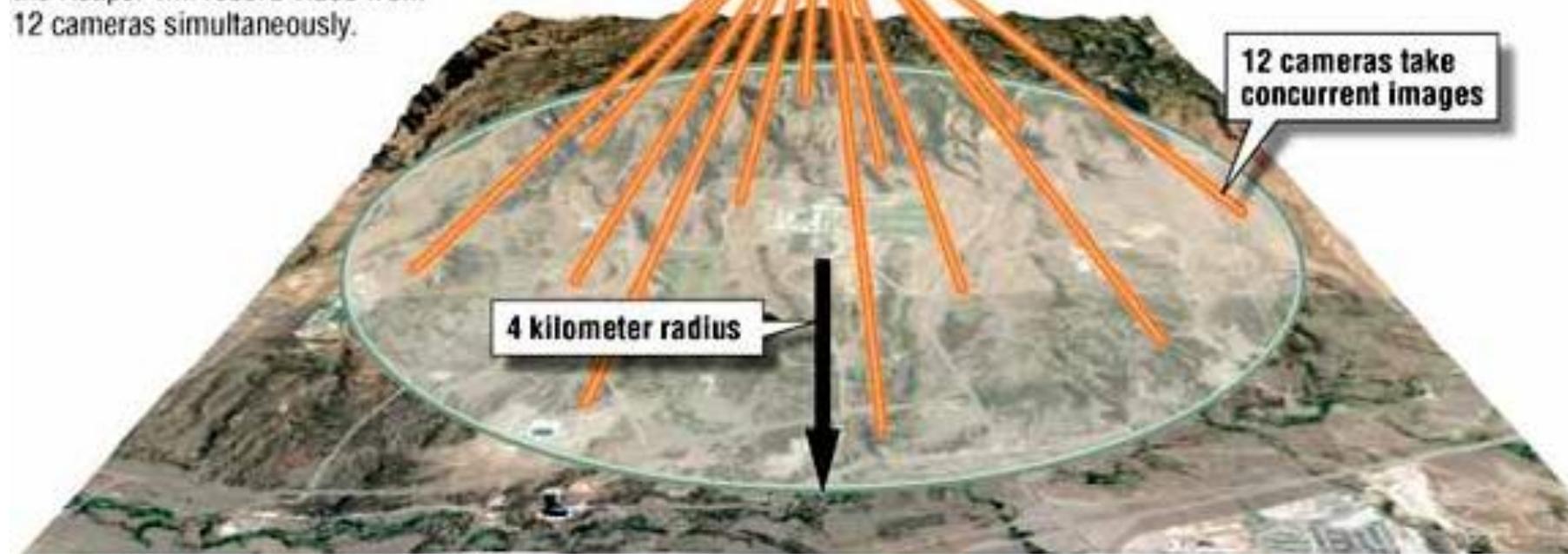
Current Reaper and Predator sensors offer a single field of view. New wide-area airborne sensors for the Reaper will record video from 12 cameras simultaneously.



MQ-9 Reaper

12 cameras take concurrent images

4 kilometer radius



GORGON STARE

A Birds Eye view of the new 12 Camera video feed carried by the current Predator and Reaper Drones in Afghanistan.

The Old "Soda Straw" View



- <https://www.youtube.com/watch?v=0p4BQ1XzwDg>
- <https://www.youtube.com/watch?v=lbYac5hm4BQ> CATO
Institute discussion of *Eyes in the SKY*

Book

https://www.amazon.com/Eyes-Sky-Secret-Gorgon-Stare/dp/0544972007/ref=tmm_hrd_swatch_0?encoding=UTF8&qid=&sr=



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Can't we have some fun? Drones and Recreational Use



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<https://www.youtube.com/watch?v=K4NRJoCNHIs>

John Oliver



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