



A glossary of terms, abbreviations, acronyms and slang related to
drones / remotely piloted aircraft / unmanned aerial vehicles

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AC

FAA Advisory Circular [US]

ACR

Airman Certification Representative

AGL

Above Ground Level

ALT

Vertical distance from ground.

AP

Aerial Photography

ARF

Almost Ready to Fly [also *ARTF*]

ATC

Air Traffic Control

ATM

Air Traffic Management

ATTI

Altitude.

AUVSI

Association for Unmanned Vehicle Systems International

BLOS

Beyond Line of Sight

BNF

Bind and Fly

BRLOS

Beyond Radio Line of Sight

BVLOS

Beyond Visual Line of Sight

BVR

Beyond Visual Range

C2

Command and Control

C2 Range

Command and Control Range

CAP 722

Operational Guidance [UK]

CF

carbon fiber

CFI

Certified Flight Instructor

CFR

Code of Federal Regulations

CL

Connectionless

COA

Certificate of Authorization [also *Certificate of Waiver*]

COTS

Commercial off the Shelf

CS

Control Station

D&A / DAA

Detect and Avoid

DPE

Designated Pilot Examiner

DSA

Detect, Sense and Avoid

EASA

European Aviation Safety Agency

EP

External Pilot

ESC

Electronic Speed Controller

FAA

Federal Aviation Administration [US]

FAR

Federal Aviation Regulations

FC

Flight controller

FFF

Fast Forward Flight

FLIR

Forward Looking Infrared

FMRA

FAA Modernization and Reform Act of 2012

FOV

Field of View

FP

Flight Plan

FPV

First Person View

FSDO

Flight Standards District

Office	Line of Sight	Pilot in Command
GCS Ground Control Station	LRPAS Light Remotely Piloted Aircraft System	POI Point of Interest
GPS Global Positioning System	LZ Landing Zone	QC Quadcopter
HC Hexacopter	MAV Micro Air Vehicle / Mini Air Vehicle	Quad Quadcopter
Hexa Hexacopter	MSA Minimum Safe Altitude	RC Radio Controlled / Remote Controlled [also R/C]
HL Hand Launched	MSL Mean Sea Level	RLOS Radio Line of Sight
IACRA Integrated Airmen Certification and/or Rating Application	NAS National Airspace System	ROA Remotely Operated Aircraft
ICAO International Civil Aviation Organization	Naza Autopilot system (Registered trademark of DJI Innovations)	RocDocs Recent domestic drone crashes
IMU Inertial Measurement Unit	NMAC Near Mid Air Collision	ROI Region of Interest
IOC Intelligent Orientation Control	NOTAM Notice to Airmen	RP Route Plan / Remote Pilot
ISR Intelligence Surveillance Reconnaissance	OC Octocopter	RPA Remotely Piloted Aircraft
KTC Knowledge Testing Center	Octo Octocopter	RPAS Remotely Piloted Aircraft System
L&R Launch and Recovery	OEM Original Equipment Manufacturer	RPS Remote Pilot Station
LOS	PIC	RTF Ready to Fly

RTH Return to Home	Uninhabited Aerial Vehicle
RTL Return to Launch	UCAV Unmanned Combat Aerial Vehicle
Rx Receiver	U.S.C. United States Code
SA Situational Awareness	UTM UAS Traffic Management System
SAA Sense and Avoid	VLOS Visual Line of Sight
SUA Small Unmanned Aircraft	VO Visual Observer
sUAS small Unmanned Aircraft Systems	VRS Vortex Ring State
SUSA Small Unmanned Surveillance Aircraft	VTOL Vertical Take-Off and Landing
TO Take-Off	VTx Video Transmitter
Tri Tricopter	WP Waypoint
Tx Transmitter / radio controller	
UA Unmanned Aircraft	
UAS Unmanned Aircraft System	
UAV Unmanned Aerial Vehicle /	

2.4 Gigahertz (Ghz)

The is the radio frequency rate most commonly used for UAS radio control.

above ground level (AGL)

[see *altitude*]

absolute altitude

[see *altitude*]

aircraft

Any contrivance invented, used, or designed to navigate, or fly in, the air.

aircraft principle axes

An aircraft in flight is free to rotate in three dimensions: *pitch*, forward (nose) up or down about an axis running from left to right, *yaw*, forward (nose) left or right about an axis running up and down; and *roll*, rotation about an axis running from front to back (nose to tail). [see [graphic](#)]

airfoil

[see [graphic](#)]

altitude (ATTI)

The height measured from directly above ground (AGL) is the *absolute altitude*. The height measured from mean sea level (MSL) is the *true altitude*.

ATTI mode

Flight mode where the altitude is set, but lateral movement is not stabilized when the controls are released. [see *flight modes*]

autonomous aircraft

An aircraft that does not require pilot intervention in flight operations.

autopilot

The component of an aircraft that is capable of guiding movement of the aircraft without real-time human guidance

avionics

The science and technology of electrical and electronic devices in flight. [see *graphic*]

binding

The receiver needs to be 'bound' to the transmitter before it can receive signals from it. The process involves the receiver (Rx) identifying a unique code being emitted from the transceiver (Tx), and then the two components lock together on an available frequency.

carbon fiber (CF)

Carbon fiber is a material consisting of extremely small fibers. The properties of carbon fibers, such as high stiffness, high tensile strength, low weight, high chemical resistance, high temperature tolerance and low thermal expansion, make them very popular in remotely piloted aircraft. [also *graphite fiber* and *carbon graphite*]

ceiling

Height above ground or water of the base of the lowest layer of cloud below 20,000 feet [~6000 meters] which covers more than half of the sky.

Certificate of Waiver or Authorization (COA)

The terms "certificate of waiver" and "certificate of authorization" mean a Federal Aviation Administration grant of approval for a specific flight operation. [FAA]

collision avoidance

Action taken to prevent flying into a fixed object or another aircraft. [see *detect and avoid* and *flight modes*]

command and control (C2)

The exercise of authority and direction by the pilot.

command and control link

Spectrum and associated equipment used to fly the aircraft from the control station.

command and control range

Distance between ground control station and aircraft at which positive control of the aircraft can be maintained.

commercial operation

An aircraft operation conducted for business purposes (mapping, security surveillance, wildlife survey, aerial application, etc.) other than commercial air transport, for remuneration or hire.

control station (CS)

An interface used by the remote pilot or the person manipulating the controls to control the flight path of the small UA. [FAA]

corrective lenses

Spectacles or contact lenses. [FAA]

course lock

[see *intelligent orientation control* and *flight modes*]

creative pattern

[see *formation*]

detect, sense and avoid (DSA)

DSA can be defined as: Detect-is something there? Sense-is it a threat/target? Avoid-maneuver to miss. (also *detect and avoid D&A*, and *sense and avoid*)

disorientation

When the orientation and direction of the aircraft cannot be determined because of distance, obstruction or low light levels.

drone

Unmanned aircraft. Also:

- ☒ *bird (slang)*
- ☒ *craft (slang)*
- ☒ *eye in the sky / spy in the sky (slang)* [surveillance drone]
- ☒ *flying machine*
- ☒ *flying robot*
- ☒ *micro aerial vehicle (MAV)*
- ☒ *mini aerial vehicle*
- ☒ *remotely operated aerial vehicle (ROAV)*
- ☒ *remotely operated aircraft (ROA)*
- ☒ *remotely piloted aerial vehicle (RPAV)*
- ☒ **remotely piloted aircraft system (RPAS)** [EASA]
- ☒ *remotely piloted vehicle (RPV)*
- ☒ *small unmanned aircraft (SUA)*
- ☒ *small unmanned aircraft system (sUAS)*
- ☒ *small unmanned surveillance aircraft (SUSA)*
- ☒ *uncrewed aerial vehicle (UAV)*
- ☒ *uninhabited aerial vehicle (UAV)*
- ☒ *unmanned aerial vehicle (UAV)*
- ☒ **unmanned aircraft system (UAS)** [FAA & ICAO]
- ☒ *unmanned flying machine*

drone park

Large area dedicated to UAS recreation and/or research and open to the public for free or a usage fee.

electronic speed controller (ESC)

An electronic device that takes the power from the battery pack and the signal from the receiver and measures a certain amount of power to the motor.

envelope

The maximum performance parameters of an aircraft.

failsafe function

If a lost link occurs, the aircraft enters failsafe mode in it either returns to launch or lands autonomously.

Federal Aviation Administration (FAA)

The division of the United States Department of Transportation that inspects and rates civilian aircraft and pilots, enforces the rules of air safety, and installs and maintains air-navigation and traffic-control facilities.

firmware

Firmware is the control program for the aircraft. ‘Software for hardware.’

first person view (FPV)

A technique that enables an operator to assume a cockpit view using a display screen or video goggles, with a wireless, real-time connection to an on-board video camera.

FPV mode

The *first person view mode* setting “freezes” the gimbal so the camera tilts with the aircraft rather than stabilizing horizontally. It creates more of the sensation of flying. [see *flight modes*]

fixed-wing aircraft

An aircraft capable of flight using forward motion that generates lift as the wing moves through the air. [also *airplane*, *aeroplane* or *plane*. See *rotary-wing aircraft*] [see [graphic](#)]

flight modes

Flight modes [also *stabilization modes*] include:

- ⊗ aerobatic, acro, agility, manual, rate (non-self-leveling)
- ⊗ air mode (zero throttle)
- ⊗ altitude hold, ATTI mode, baro (barometric altitude mode) (non-GPS)
- ⊗ auto mode, autonomous flight, programmed flight, waypoints
- ⊗ collision avoidance & brake mode

- ⊗ course lock
- ⊗ first person view (FPV)
- ⊗ follow me
- ⊗ geofencing & safe circle
- ⊗ GPS hold, loiter mode
- ⊗ home lock, carefree, head free, headless, heads-up, simple, smart mode [see *headless mode*]
- ⊗ horizon, stable mode (aerobatic with self-leveling)
- ⊗ hover mode [see *hover mode*]
- ⊗ magnetic (mag) mode
- ⊗ sport mode (rate controlled stabilize plus altitude hold)
- ⊗ standard, angle, free flight, normal, self-level, stabilize mode (GPS or non-GPS)
- ⊗ point of Interest, orbit, circle mode
- ⊗ return to home (RTH), auto return, GPS home, return-to-launch (RTL)
- ⊗ throw mode [see *failsafe function*] [see [graphic](#)]

flight plan (FP)

The operator’s plan for the safe conduct of the flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed. [also *operational flight plan*]

flyaway

Unintended flight outside of operational boundaries (altitude/airspeed/lateral) as the result of a failure of the control element or onboard systems, or both. Flyaways do not have or do not initiate failsafe mode to return to launch [also *fly away*]

flyaway protection system

A system that will return the aircraft safely to the surface, or keep the aircraft within the intended operational area when the command and control link between the pilot and the aircraft is lost. [see *failsafe function*]

formation

Flying several drones or *swarm* that form a shape or pattern. When flown close together, this is a *tight formation*. [also *creative pattern*]

geofence

A virtual barrier indicating how far a GPS quadcopter can fly from its home point. Geofence settings are usually height above ground as well as total distance from the home point. [see *flight modes*]

gimbal

A mechanism, typically consisting of rings pivoted at right angles (3-axial stabilized), for keeping a camera or other instrument horizontal during flight.

Global Positioning System (GPS)

A global system of U.S. navigational satellites developed to provide precise positional and velocity data and global time synchronization for air, sea, and land travel.

GPS mode

Flight mode where the craft will remain in the altitude, position and orientation that it is in when the controls are released. Also necessary for automatic return to home. [see *flight modes*]

ground control station (GCS)
[see *ground station* and *remote pilot station*]**ground effect**

Described as an increase of performance near the ground. Which means, near the ground your blades produce more lift.

gyro

A device used to help stabilize the yaw of a helicopter or multi-rotor.

headless mode

When you take off with the drone pointing in the front, algorithms inside of the drone's micro-controller ensure that any directional change is compensated. In other words, even

when you turn your drone 90 degrees to the left, it'll still go forward when you push the rudder forward (on a non-headless mode drone, this would make the drone go left). [see *flight modes*]

hexacopter

An aircraft with six (6) main rotors. [see *graphic*]

hobby grade

Another word for drones that are a step up from toys.

hobbyist

Non-commercial, recreational model aircraft pilot. [also *aeromodeller*]

home lock

[see *intelligent orientation control* and *flight modes*]

homing

[see *failsafe function*, *flyaway protection system*, *return to launch*, and *flight modes*]

hover mode

An aircraft maintaining a specified altitude and position via GPS. Hover mode is often related to a point of interest. [see *flight modes*]

hybrid

An aircraft made by combining two different elements. Common hybrid drones combine VTOL with fixed wing; or electric and gas engines.

inertial measurement unit (IMU)

An electronic device that measures and reports on a craft's velocity, orientation, and gravitational forces, using a combination of accelerometers and gyroscopes, sometimes also magnetometers.

International Civil Aviation Organization (ICAO)

The International Civil Aviation Organization (ICAO) is a United Nations specialized agency that works with 191 nations, global industries and aviation organizations to develop international *Standards and Recommended Practices* which are then used by the nations when they develop their legally-binding national civil aviation regulations.

incident

An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

intelligent orientation control (IOC)

Usually, the forward direction of a flying multi-rotor is the same as the nose direction. By using intelligent orientation control, wherever the nose points, the forward direction has nothing to do with nose direction: In *course lock* flying, the forward direction is the same as a recorded nose direction. In *home lock* flying, the forward direction is the same as the direction from home point to the multi-rotor.

light remotely piloted aircraft

Remote piloted aircraft with a mass less than 150 kilograms [330 pounds].

line of sight (LOS)

Many small aircraft are line-of-sight machines, meaning the person controlling the device must be in direct sight of the aircraft so that radio signals can be transmitted back and forth. Most larger aircraft are not line-of-sight aircraft because the radio signals that control them are bounced off of satellites or manned aircraft.

line of sight command and control link

Aircraft system operating within visual/radio range.

lost link

Loss of command and control link contact with the remotely piloted aircraft such that the remote pilot can no longer manage the aircraft's flight.

micro air vehicle (MAV)

An aircraft weighing less than 2 pounds [1 kilogram]. [also *micro UAV*]

minimum safe altitude (MSA)

The public domain for airspace starts at the minimum safe altitude (MSA). In general, people's property ends at the highest of the underlying land's trees, buildings, fences, or how high the owner can use the airspace in connection with the land.

mission plan

The route planning, payload planning, data link planning, and aircraft emergency recovery planning for a flight.

model aircraft

An unmanned aircraft that is:

- ⊗ Capable of sustained flight in the atmosphere
- ⊗ Flown within VLOS of the person operating the aircraft; and
- ⊗ Flown for hobby or recreational purposes [FAA]

multi-rotor

An aircraft with two or more main rotors. [also *multicopter*] [see [graphic](#)]

National Airspace System (NAS)

The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations

and procedures, technical information, and manpower and material.

non-collaborative things

Moving and stationary objects in the air (such as balloons and birds) and on the ground that are not electronically communicating with the aircraft for collision avoidance.

octocopter

An aircraft with eight (8) main rotors. [see [graphic](#)]

operational control

The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of safety of the aircraft and the regularity and efficiency of the flight.

payload

All elements of a remotely piloted aircraft that are not necessary for flight but are carried for the purpose of fulfilling specific mission objectives.

permanent areas

The term “permanent areas” means areas on land or water that provide for launch, recovery, and operation of small unmanned aircraft. [FAA]

permanent deformation

A condition whereby an aircraft structure is altered such that it does not return to the shape required for normal flight.

person manipulating the controls

A person other than the remote pilot in command (PIC) who is controlling the flight of an sUAS under the supervision of the remote PIC. [FAA]

pilot

The person in direct control of the aircraft. [also remote pilot]

pilot-in-command (PIC)

An aircraft that is flying in a state of direct control by an aircraft operator (i.e. not in autonomous flight). In this instance, the operator can also be referred to as the Pilot in Command.

pitch

[see *aircraft principle axes*, see [graphic](#)]

point of interest (POI)

A target location for the capture of remotely sensed data by an aircraft’s sensors (i.e. video, still or multi-spectral imagery). [also *region of interest*] [see *flight modes*]

prop guards

A light frame extending beyond the radius of the rotors as a protection measure.

propeller

A mechanical device for propelling the aircraft, consisting of a revolving shaft with two or more broad, angled blades attached to it. [see *rotor*]

public unmanned aircraft system

The term “public unmanned aircraft system” means an unmanned aircraft system that meets the qualifications and conditions required for operation of a public aircraft. [FAA]

quadcopter

An aerial vehicle with four (4) main rotors. [also *quadcopter*, see [graphic](#)]

radio line of sight (RLOS)

A direct electronic point-to-point between a transmitter and receiver.

range extender

A communication device on the remote controller that links the aircraft to another device such as a smart-phone or tablet.

rate mode

[see *flight modes*]

recreational model aircraft hobbyist

[see *hobbyist*]

remote controlled aircraft

[also remote controlled airplane, remote controlled helicopter] [see *remotely piloted aircraft*]

remote controller

The handheld device used to operate the UAV and typically consisting of a radio transceiver, GPS and flight controls. Remote controllers may also include FPV screens and camera controls.

remote pilot (RP)

The person who manipulates the flight controls of a remotely-piloted aircraft during flight time.

remote pilot station (RPS)

[see *ground control station*]

remote Pilot in Command (remote PIC)

A person who holds a remote pilot certificate with an sUAS rating and has the final authority and responsibility for the operation and safety of an sUAS operation conducted under part 107. [FAA]

remotely operated aircraft (ROA)

[see *remotely piloted aircraft*]

remotely piloted aircraft (RPA)

An aircraft which is piloted from a remote pilot station. The term *remotely piloted aircraft* is preferred by the International Civil Aviation Organization over *unmanned aerial vehicle*. [see *unmanned aerial vehicle*]

remotely piloted aircraft system (RPAS)

A set of configurable elements consisting of a remotely-piloted aircraft, its associated remote pilot station(s), the required command and control links and any other system elements as may be required, at any point during flight operation. Remotely piloted aircraft systems weigh less than 150 kilograms [330 pounds]. Note: The term remotely piloted aircraft system and all associated terms are recommended by the International Civil Aviation Organization over unmanned aircraft systems and related terms. [see *unmanned aircraft system*]

return to home

[see *return to launch* and *flight modes*]

return to launch (RTL)

The return of an aircraft to its original launch location. Also known as *homing* and often performed as a safety procedure in the event of a technical malfunction or emergency. [also *return to home*] [see *flight modes*]

roll

[see *aircraft principle axes*, see [graphic](#)]

rotary-wing aircraft

A heavier-than-air flying machine that uses lift generated by wings, called rotor blades, that revolve around a mast. [see *fixed-wing aircraft*]

rotor

A hub with a number of radiating airfoils (blades) that is rotated in an approximately

horizontal plane to provide the lift for a rotary-wing aircraft. [see *propeller*]

rotorcraft

[see *rotary-wing aircraft*]

route plan (RP)

A set of waypoints for the aircraft to follow.

sense and avoid capability

The term “sense and avoid capability” means the capability of an unmanned aircraft to remain a safe distance from and to avoid collisions with other airborne aircraft. [FAA] [see *detect, sense and avoid*]

settling with power

[see *vortex ring state*] [see [graphic](#)]

situational awareness (SA)

An all-encompassing term for keeping track of what’s happening when flying.

small unmanned aircraft (UA)

An unmanned aircraft weighing less than 55 pounds, including everything that is onboard or otherwise attached to the aircraft, and can be flown without the possibility of direct human intervention from within or on the aircraft. [FAA]

small unmanned aircraft system (sUAS)

A small unmanned aircraft and its associated elements (including communication links and the components that control the small UA) that are required for the safe and efficient operation of the small UA in the National Air Space. [FAA]

small unmanned surveillance aircraft (SUSA)

[see *remotely piloted aircraft*]

sonar obstacle avoidance

Active sonar (sound navigation and ranging) uses acoustic measurement to detect and avoid obstacles such as trees and buildings.

stabilization mode

[see *flight modes*]

stick

A flight control feature on the remote controller. Typically there are two sticks to control throttle (power), orientation (left stick) and direction (right stick).

test range

The term “test range” means a defined geographic area where research and development are conducted. [FAA]

tip path

The path in space traced out by the tips of the rotor blades.

toy grade

Hobby retailers like to distinguish between “hobby grade” (good/expensive) and “toy grade” (poor/low-cost) multicopters, but much can be learned from the art of keeping a “toy grade” microcopter in the air.

track

Actual flight path of aircraft above ground.

translational lift

Additional lift provided by lateral movement as opposed to hovering. Translational lift also helps prevent *vortex ring state*.

tricopter

An aircraft with three (3) main rotors. [see [graphic](#)]

true altitude

[see *altitude*]

unmanned aerial vehicle (UAV)

An unmanned aerial vehicle, commonly known as a drone and referred to as a remotely piloted aircraft by the International Civil Aviation Organization, is an aircraft without a human pilot aboard. Its flight is controlled either autonomously by onboard computers or by the remote control of a pilot on the ground or in another vehicle. The typical launch and recovery method of an aircraft is by the function of an automatic system or an external operator on the ground. Military versions are unmanned combat aerial vehicles (UCAVs).

unmanned aircraft (UA)

An aircraft operated without the possibility of direct human intervention from within or on the aircraft. [FAA]

unmanned aircraft system (UAS)

The term “unmanned aircraft system” means an aircraft and associated elements (including communication links and the components that control the aircraft) that are required for the pilot in command to operate safely and efficiently in the national airspace system. [FAA] [also remotely piloted aircraft system]

Note: *remotely piloted aircraft system* is the recommended term for the International Civil Aviation Organization.

Unmanned Aircraft System Traffic Management (UTM)

While incorporating lessons learned from the well-established Air Traffic Management (ATM) system, which grew from a mid-air collision over the Grand Canyon in the early days of commercial aviation, the UTM system would enable safe and efficient low-altitude airspace operations by providing services such as airspace design, corridors, dynamic geofencing, severe weather and wind avoidance, congestion management, terrain

avoidance, route planning and re-routing, separation management, sequencing and spacing, and contingency management. [NASA]

vertical take-off and landing (VTOL)

The capability of an aircraft to take off and land vertically, transferring to or from forward motion at heights required to clear surrounding obstacles. Generally applied to rotary-wing aircraft although also possible by some fixed-wing aircraft.

visual line of sight (VLOS)

Unaided (corrective lenses and/or sunglasses excepted) visual contact between a pilot in command and an unmanned aircraft sufficient to maintain safe operational control of the aircraft, know its location, and be able to scan the airspace in which it is operating to see and avoid other air traffic or objects aloft or on the ground.

visual observer (VO)

A person acting as a flightcrew member who assists the small UA remote PIC and the person manipulating the controls to see and avoid other air traffic or objects aloft or on the ground. [FAA]

vortex ring state (VRS)

Air vortices can form around the main rotor of a helicopter, causing a dangerous condition known as vortex ring state (VRS) or “settling with power”. In this condition, air that moves down through the rotor turns outward, then up, inward, and then down through the rotor again. This re-circulation of flow can negate much of the lifting force and cause a catastrophic loss of altitude. Applying more power (increasing collective pitch) serves to further accelerate the downwash through which the main-rotor is descending, exacerbating the condition. [also *settling with power*, *recirculation* and *wobble of death*] [see [graphic](#)]

waypoint (WP)

A specified geographical location used to define an area navigation route or the flight path of an aircraft employing area navigation. [see *flight modes*]

X8

Multicopter with eight (8) motors and shaped in an “X” with four (4) motors on top and four (4) motors on bottom. [see [graphic](#)]

Y6

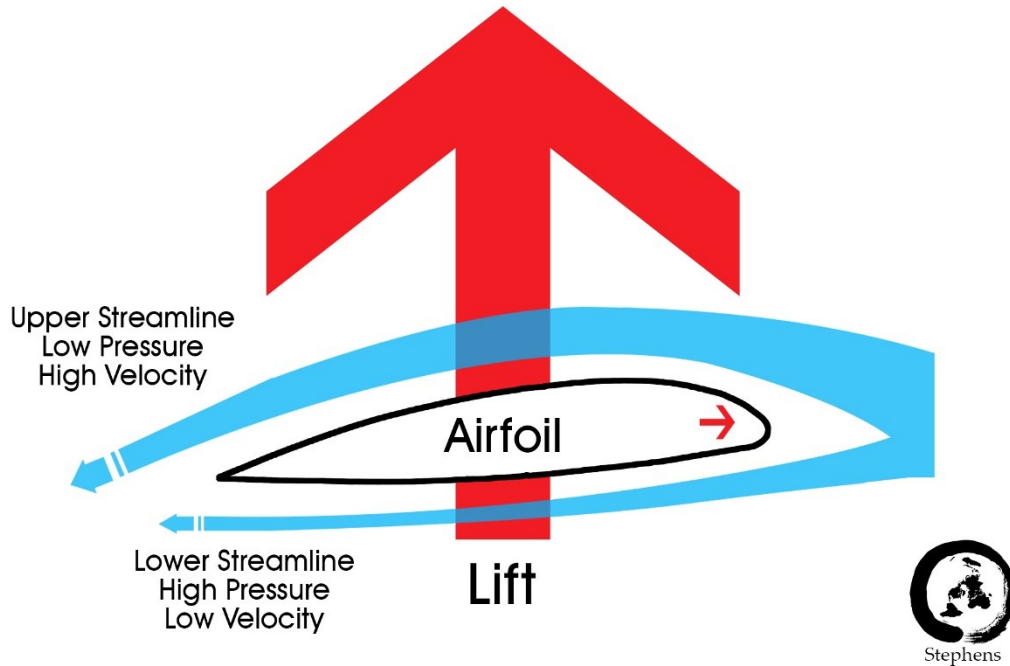
Multicopter with six (6) motors and shaped in a “Y” with three (3) motors on top and three (3) motors on bottom. [see [graphic](#)]

yaw

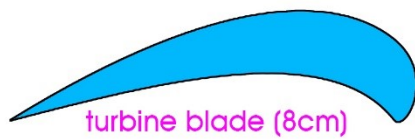
[see *aircraft principle axes*, see [graphic](#)]

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Airfoil and Lift



Airfoils



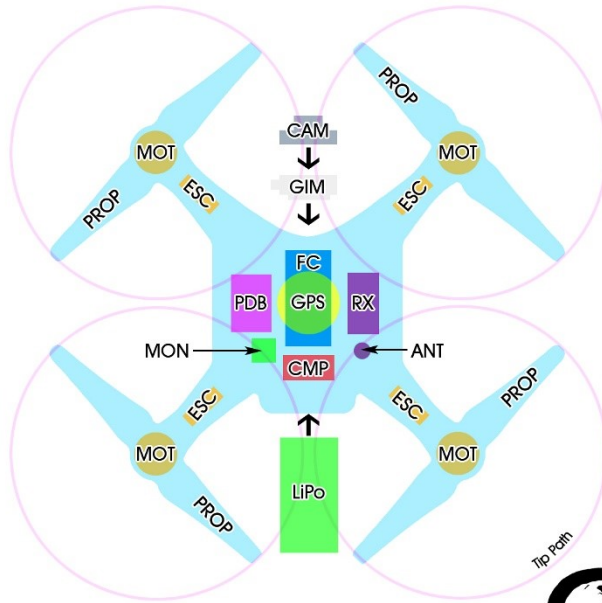
Drone Avionics

- ANT antenna
- LiPo lithium polymer battery
- CAM camera
- ESC electronic speed control

- FC flight controller / control board / autopilot
- ACC accelerometer sensor
- BAR barometric pressure sensor
- CMP compass
- GPS global positioning system module
- GYRO gyroscope sensor
- IMU inertia measurement unit
- MAG magnetometer
- PDB power distribution board
- TEL telemetry

- GIM gimbal
- MON battery monitor/alarm
- MOT brushless motor
- PROP propeller
- REX range extender
- RX receiver
- TX transmitter / remote controller / ground control station

Remote Controller



Unmanned Aerial Vehicle



Drone Flight Modes

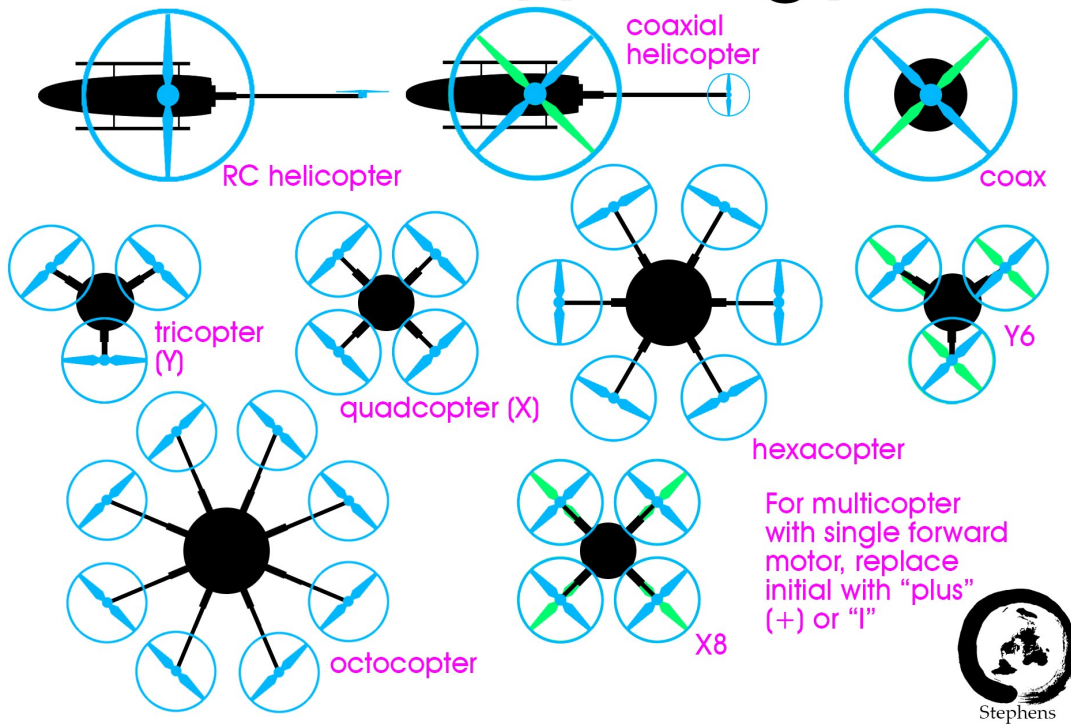
	Acro Aerobatic, Agility, Manual, Rate		Drift		Home Lock Carefree, Headless, Simple		Return to Home Auto Return, Return to Launch, RTL
	Active Track		First Person View FPV		Hover Hold Position, Loiter		Tap Fly
	Altitude Hold A-mode, ATTI		Follow Me		Normal Angle, Horizon, Position, Standard		Terrain Follow
	Auto Land One Touch Down		Geo-fencing Safe Circle		Obstacle Avoidance		Tripod Beginner
	Course Lock		Gesture		Point of Interest Circle, Orbit		Wayfind Guided, Programmed

Primary Modes
 Smart Modes
 Advanced Modes

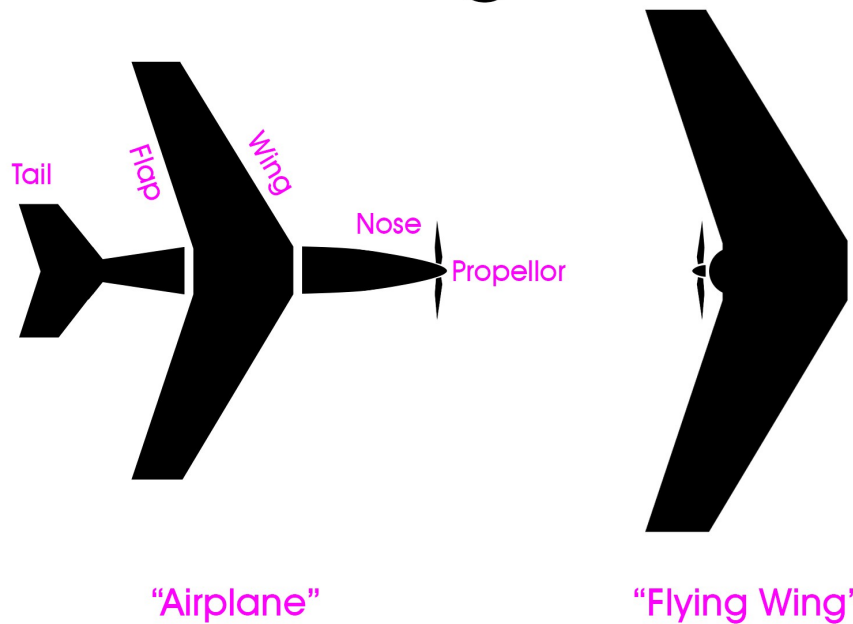
There are many other specialized modes



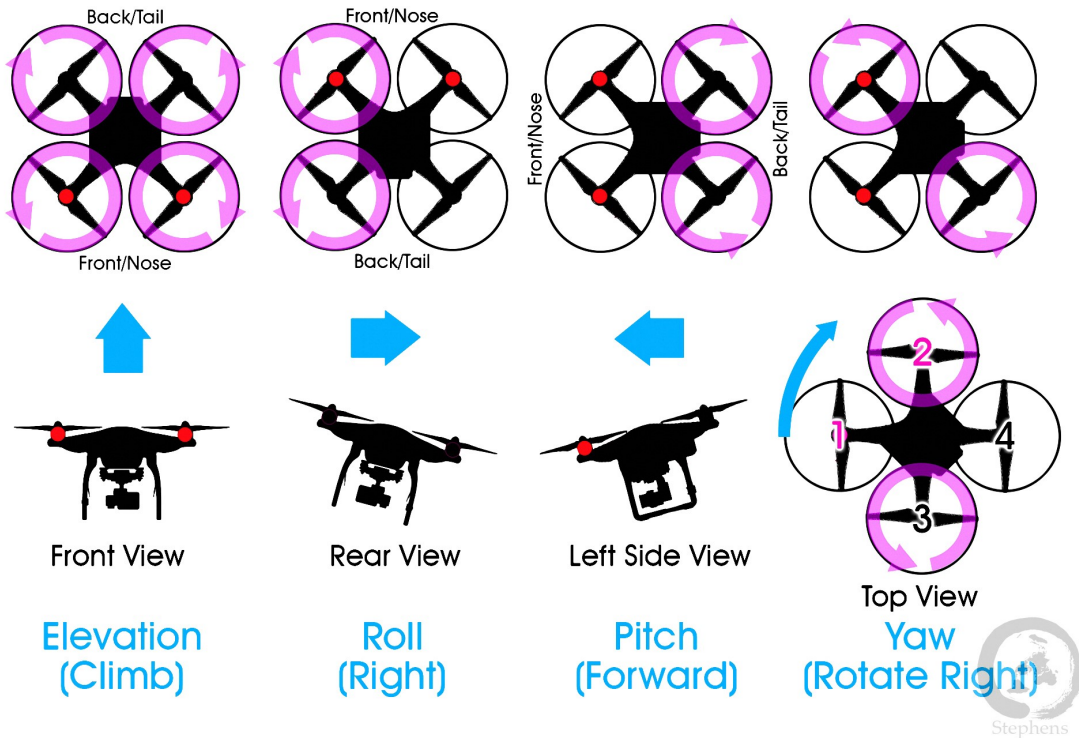
Drone Typology



Fixed Wing Drones

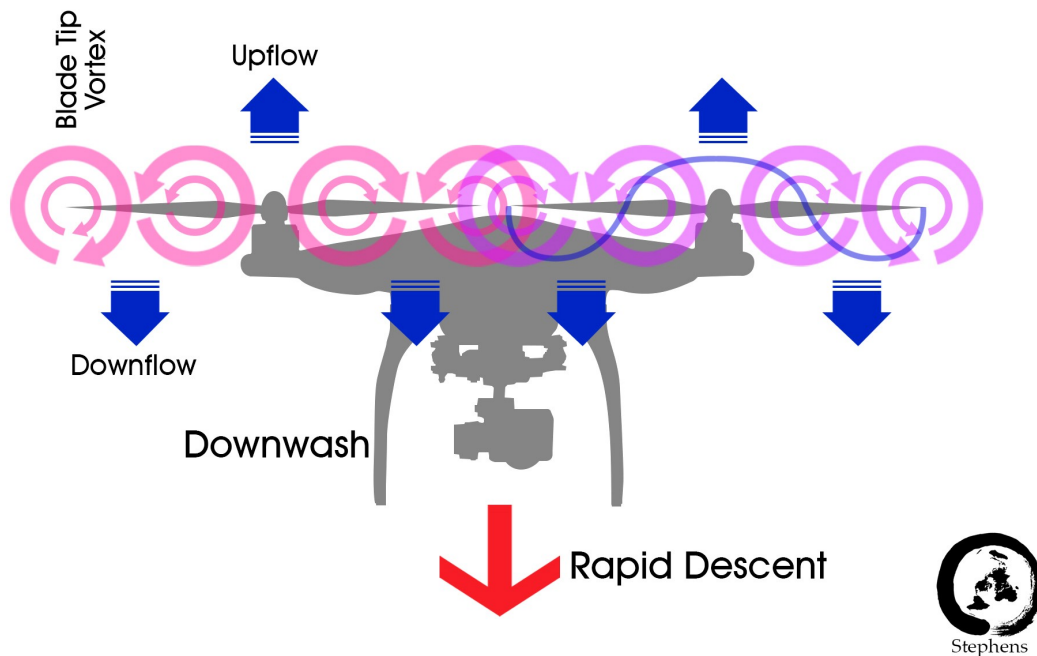


Quadcopter Axes & Motions

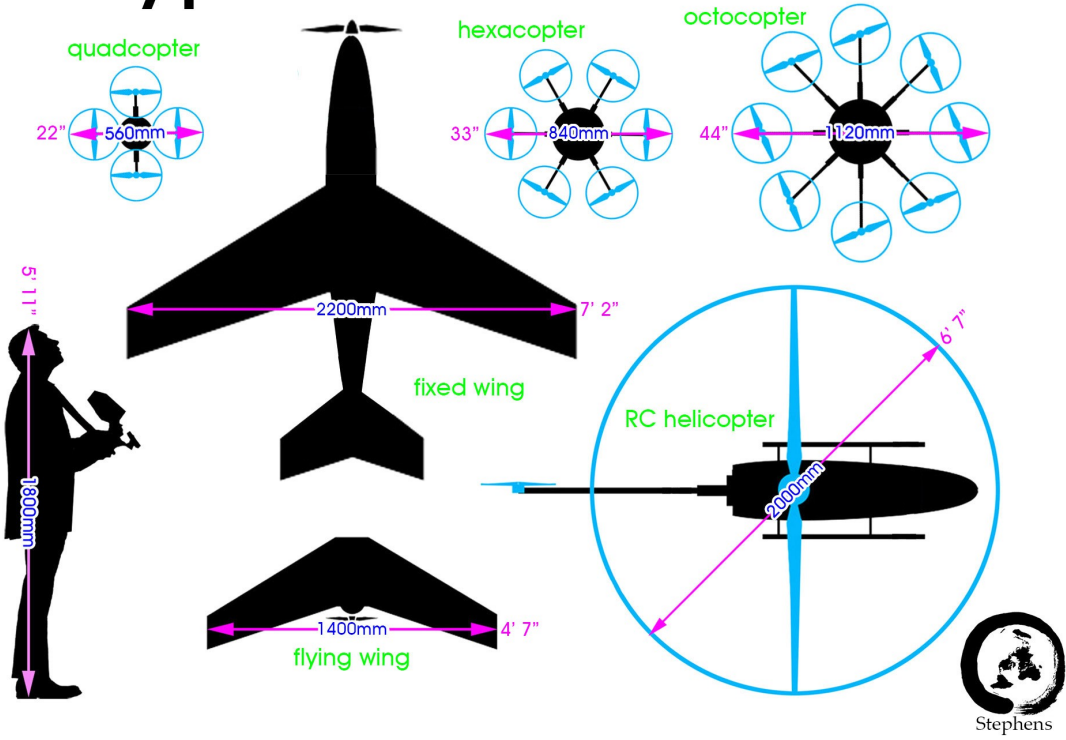


Quadcopter Vortex Ring State

Settling with Power



Typical Drone Sizes



acro mode

Acrobatic mode [see *flight modes* in glossary]

air pocket

Transient jolt of turbulence.

ARC

Almost Ready to Crash. An aircraft that knows something that the pilot is just about to find out. [from *ARF Almost Ready to Fly*]

barnstormer

Reckless, low-level, stunt pilot.

bending plastic

Crash.

bent

Damaged, broken, or inoperative.

bingo

Minimum battery charge for a safe return to home.

bird

Unmanned aerial vehicle.

Boola-Boola

When an angry person knocks down or shoots down a remotely piloted aircraft (RPA).

brain fade

A mental condition where the person flying the aircraft, suddenly forgets which way to move the controls, or which control to move at all. This can happen for no apparent reason, even when you think you're comfortable at flying.

Bravo Zulu

Praise for a good job.

bringing the mail

Flying at high speed to return home. [also *carrying the mail*]

bubbas

Fellow pilots of the same aircraft.

build [noun]

Homebuilt drone.

bush pilot

A pilot flying in remote areas.

cameraship

A multicopter built with photography as a primary purpose.

CAVOK

Ceiling and Visibility OK. [see *CAVU* and *severe clear*]

CAVU

Ceiling and Visibility Unlimited: the best possible flying weather. [see *CAVOK* and *severe clear*]

Cherubs

Altitude under 1,000 feet, measured in hundreds of feet (“cherubs two” means 200 feet).

Cleanup in aisle 5

Messy indoor crash.

colorful actions

Showing off, or otherwise ignoring safe procedures while flying. [see *flathatting*]

Centurion

A pilot with over 100 missions.

conversion

Severe crash. Converting an aircraft to pieces of plastic and metal.

corkscrew

Descending in a spiral to avoid ring vortex state.

craft

Aircraft.

dead stick

An emergency landing due to a power loss when a motor quits.

Delta Sierra

Phonetics for “dumb sh*t”: describes a stupid action, and erases all previous *Bravo Zulus* and *Sierra Hotels*.

departure

Departure from controlled flight. [see *flyaway* in Glossary]

ditching

The forced landing of aircraft on water.

driver

Pilot (e.g. *Phantom driver*).

Drone Ranger

Pilot who assists with anti-poaching and/or park monitoring.

Dronie

[see *sky selfie*]

droning

Flying a drone or UAV (unmanned aerial vehicle) for recreational purposes.

drop in for lunch

Crash near people.

eye in the sky

Aircraft with camera.

feet dry / feet wet

Over land / over water.

field box

Container for equipment related to the remotely piloted aircraft system. [also *flight box*]

fisheye lens effect

The distortion caused by a very wide angle lens.

flathatting

Unauthorized low-level flying and stunting. [see *colorful actions*]

flock

[see *swarm*]

floor

Ground. [see *ceiling* in Glossary]

flying machine

One of the earliest names for aircraft originally used for the Wright Brothers patent in 1906. This outdated term is occasionally applied to UAVs in legislation and local government regulations.

flying phantograph

A drone that mimics the brush or pen strokes of an artist.

flying robot

Autonomous or remotely piloted aircraft. [also *aerial robot*]

FM

Abbreviation for “f*cking magic”: very high-tech; used to describe how something you don’t understand actually works. [Also *PFM Pure F*cking Magic*]

FOD

Foreign object damage. Typically when objects hit the rotor.

four fan trash can

Poorly designed quadcopter. [also *six fan trash can* hexacopter, *eight fan trash can* octocopter]

Fox 4

High-speed mid-air collision. Note: Fox 1, 2 and 3 are types of missiles.

Fox 5

High-speed crash. [see *Fox 4*]

garage queen

An aircraft that may look pretty, but never flies.

George

Auto-pilot.

Ginsu knives

Carbon fiber propellers.

gizmo

A piece of technical gear.

go for a spin

Recreational flying.

goo

Bad weather.

GPS/compass dance

Rotating the aircraft to locate satellites and determine magnetic north.

grades

Hobby grade—higher quality kits
Toy grade—ready to fly drones costing less than \$100.

graveyard spiral

Maneuver that goes badly wrong and the aircraft spirals out of control. [see *vortex ring state* in glossary]

gripe

A mechanical problem with the aircraft.

grounded

Unable to fly.

hop

A mission or flight.

IFE

In Flight Emergency.

jink

Drastic, violent maneuver to avoid a collision.

jock

Pilot (e.g. Phantom jock).

LIPO

Lithium polymer battery.

loiter mode

[see *flight modes* in glossary]

mid-air

Mid-air collision.

mod

Modification to a drone.

no joy

Failure to make visual sighting or to establish radio communications.

pancake

To crash so hard as to flatten the aircraft.

park flyer

The general name given to any aircraft that can be safely flown in a public park / school yard / parking lot / sports field etc.

pirouette

A maneuver described as a high yaw rate in which the aircraft spins.

plastic bag

The thing used to take home the pieces that was once your beloved aircraft, before you failed to keep it airborne at the wrong moment, or didn't manage to pull off the best of landings, or tried to perform an aerobatic maneuver too close to the ground...

plumber

An inept pilot.

Popeye

Pilot flying in bad weather or visibility.

prang

To bump, crunch or break an aircraft.

prop

Propeller.

prop wash

The air behind a running propeller or below a running rotor.

proximity event

Near collision.

puke

Someone who flies a different kind of aircraft than you.

pushing the envelope

Flying near the edge of disaster. [see *envelope* in Glossary]

quad

Quadcopter.

quick fix

Stop-gap measure to repair an aircraft quickly.

rotorhead

Multicopter pilot.

RTC

Ready to Crash. [from *RTF Ready to Fly*]

satellite/compass dance

Rotating the craft to detect satellites and/or compass orientation.

sats

GPS satellites.

scud

Low clouds or rain.

scud running

Flying at low altitude.

severe clear

No clouds and unlimited visibility. [see *CAVOK* and *CAVU*]

Sierra Hotel

Phonetic abbreviation for “sh*t hot,” high praise; the pilot’s favorite and all-purpose expression of approval.

sky selfie

Self photo taken by a drone. [Also “*dronie*”]

slop

Imprecision of a control system.

smash

Airspeed.

smoking hole

An aircraft crash site.

socked in

Grounded by bad weather.

soup

Overcast weather or thick fog. [also *pea soup*]

speed of heat, warp one

Very, very fast.

spy in the sky

Remotely piloted aircraft used for surveillance by law enforcement.

stick-throttle interconnect

Mock-tech term for a pilot.

swap paint

Mid-air or ground collision with another man-made object.

swarm

Multiple drones flown in formation or used collectively to perform a task. [also *flock*]

sweet

Up and working.

Tally Ho

Aircraft in sight. [see *no joy*]

Tango Uniform

Polite phonetics for “t*ts up”; broken, not functioning.

tiger

An aggressive pilot.

totaled

Complete wreck. [see *plastic bag*]

tree trimmer

Pilot or aircraft flying near trees or crashing in a tree. [see *weed wacker*]

tumbleweed

Pilot who is disoriented or who has lost situational awareness. [see *situational awareness* in glossary]

tweak

To fine tune or adjust.

uncontrolled landing

Crash landing.

Unmanned Aerial Veg-o-matic

In reference to the rotor blades: “It slices! It dices!” Especially for carbon fiber props.

VRS death plunge

[see *vortex ring state* in Glossary]

“Watch this!”

The two most dangerous words in aviation. (similar to “Hold my beer.”)

weed wacker

Pilot or aircraft flying extremely low or crashing in the weeds.

wobble of death

[see *vortex ring state* in Glossary]

WOT

Wide Open Throttle. Full power.

zebra striping

Pattern created in pilot pants during a flyaway, collision or crash.

无人驾驶飞机

wú rén jiàoshǐ fēijī

CHINESE—unmanned aircraft.

onbemand luchtvaartuig
(drone)

DUTCH—unmanned aerial vehicle (drone).

miehittämättömiä ilma

FINNISH—unmanned aerial vehicle.

aéronef sans pilote (drone)

FRENCH—unmanned aircraft.

petit véhicule aérien sans
pilote (drone)

FRENCH—small unmanned aerial vehicle
(drone).

Drohne

GERMAN—drone.

ferngesteuertes Flugzeug

GERMAN—remotely piloted aircraft.

ferngesteuertes
Luftfahrtsystem

GERMAN—remotely piloted aircraft system.

unbemannte Luftfahrtzeuge

GERMAN—unmanned aircraft.

unbemanntes Fluggerät

GERMAN—unmanned aerial vehicle.

μη επανδρωμένα αεροσκάφη
mi epandroména aeroskáfi

GREEK—unmanned aircraft

aeromobili pilotaggio remoto
(APR)

ITALIAN—unmanned aerial vehicle (UAV).

drona

ITALIAN—drone.

無人機

mujin-ki

JAPANESE—unmanned aircraft.

무인 항공기 시스템

mu-in hang-gong-gi siseutem

KOREAN—unmanned aircraft systems.

ubemannede fly

NORWEGIAN—unmanned aerial vehicle.

bezzałogowego samolotu

POLISH—unmanned aerial vehicle.

беспилотные летательные
аппараты

bespilotnyye letatel'nyye
apparaty (BPLA)

RUSSIAN—unmanned aerial vehicle (UAV).

vehículo aéreo no tripulado
(VANT)

SPANISH—unmanned aerial vehicle (UAV).

obemannat luftfordon

SWEDISH—unmanned aerial vehicle.

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Uses for Drones

Practical applications for Unmanned Aerial Vehicles



DJI Spreading Wings S800 Evo

Emergency Services & Disaster Recovery



1. Disaster & hazmat monitoring
2. Emergency delivery (medicine, equipment, supplies...)
3. Emergency response coordination (situational awareness)
4. Disaster relief & post-disaster assessment
5. Search & rescue

Urban Planning, Real Estate, Architecture & Engineering



21. Construction management
22. Environmental design (architecture, engineering, landscape architecture, urban design)
23. Mapping (archaeology, resource, topography...)
24. Marketing
25. Site analysis, planning & design

Security Services



6. Crime scene investigation
7. Criminal surveillance & tracking
8. Police response coordination
9. Security surveillance
10. Training & evaluation

Media & Communications



26. Advertising & marketing
27. Art (commercial design, fine art, social practice...)
28. Entertainment (film, television, Internet...)
29. Investigative journalism
30. News photography & videography

Agriculture, Aquaculture, Silviculture, Viticulture



11. Chemical & biological monitoring (irrigation, pesticides, treatments...)
12. Flood & fire detection & monitoring
13. Inventory & records
14. Pest & disease detection & treatment
15. Precision operations & management

Business & Commerce



31. Aero-technology / robotics research & development
32. Documentation (accident reporting, building verification, site status...)
33. Exploration (water, oil, gas, mineral...)
34. Inspection (infrastructure, structural, industrial...)
35. Pick-up & delivery services

Environmental Management



16. Environmental hazard assessment
17. Environmental impact assessment & compliance
18. Invasive species & pest control
19. Scientific research
20. Wildlife & habitat monitoring & protection

Recreation & Entertainment



36. Exploration
37. Group activities & events
38. Hobby (do-it-yourself & kit building)
39. Personal photography & videography
40. Remote control flying

The potential value of unmanned aerial vehicles (UAVs) is extraordinary. Privacy and safety issues must be addressed rationally and within the larger context of these public and private benefits.

Stephens Planning & Design LLC
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