Glossary of Terms

2.4 GHz
The frequency most commonly used for UAV radio communications

808 camera
The 808 is a small color video camera with audio that also takes photos

Academy of Model Aeronautics (AMA)
The main US model aircraft association

Accelerometer
An accelerometer is a device that measures proper acceleration ("g-force")

Airspace
A portion of the atmosphere sustaining aircraft flight and which has defined boundaries and specified dimensions. Airspace may be classified as to the specific types of flight allowed, rules of operation, and restrictions in accordance with International Civil Aviation Organization standards or State regulation. There are five classes of airspace, A, B, C, D, and E, in the National Airspace System.

Airspace: Class A
Generally, that airspace from 18,000 feet mean sea level (MSL) up to approximately 60,000 feet, including the airspace overlying the waters within 12 nautical miles (nm) of the coast of the 48 contiguous states and Alaska. Unless otherwise authorized, all persons must operate their aircraft under Instrument Flight Rules (IFR).

Airspace: Class B
Generally, that airspace from the surface to 10,000 feet mean sea level (MSL) surrounding the nation’s busiest airports in terms of airport operations or passenger enplanements.

Airspace: Class C
Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are

serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5 nm radius, an outer circle with a 10 nm radius that extends from no lower than 1,200 feet up to 4,000 feet above the airport elevation.

Airspace: Class D
Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each class d airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures.

Airspace: Class E
Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is class e airspace. The types of Class E airspace areas are :(1) Surface area designated for an airport - when designated as a surface area for an airport, the airspace will be configured to contain all instrument procedures.

Airspace: Class G
Class G airspace (uncontrolled) is that portion of airspace that has not been designated as Class A, Class B, and Class C, Class D, or Class E airspace.

Arduino
Arduino is an open-source electronics platform based on easy-to-use hardware and software. It is intended for anyone making interactive projects

Autonomous
A UAV that can be programmed to fly a designated flight pattern without a pilot controlling it

Axis
Every UAV has a Longitudinal Axis, which runs from the tail to the nose of the unit, and a Lateral Axis that runs from one side to the other side

Balanced Battery Charger
A charger that also keeps the cells of the battery balanced by transferring energy from or to the individual cells in order to maximize a battery's capacity to make all of its energy available for use and increase the battery's longevity

Barometric Pressure Sensor
A sensor that measures fluctuations in the pressure exerted by the atmosphere

Battery: C-Rating
Maximum steady-state current (amps) at which the battery cell or pack may be discharged without having pack temperature exceed the temperature that results in permanent damage, loss of capacity or reduction in cell life. C-rating is expressed as a multiple of the capacity. For example, a battery with a nominal capacity of 4 Ah may have a C-rating of 5C, meaning that 20 A would be considered its maximum safe current.

Battery Eliminator Circuit (BEC)
Used in an electric-powered radio controlled model, the BEC is typically part of the electronic speed control (ESC). BEC allows such a model to carry only one battery (the motive power battery) instead of two (motive power, and a separate battery to operate the R/C equipment)

Binding
The process of training a transmitter and receiver to communicate with each other

Bind-N-Fly (BNF)
Using 2.4GHz DSM2/DSMX technology, a single transmitter can be bound to various RC units outfitted with a compatible receiver

Brushless DC electric motor (BLDC motors, BL motors)
Also known as electronically commutated motors (ECMs, EC motors) are synchronous motors that are powered by a DC electric source via an integrated inverter/switching power supply, which produces an AC electric signal to drive the motor. Their favorable power-to-weight ratios and large range of available sizes, from under 5 gram to large motors rated at well into the kilowatt output range, have revolutionized the market for electric-powered model flight, displacing virtually all brushed electric motors.

Camera Gimbal
A pivoted support used in aerial photography in order to allow a balanced movement for camera and lenses

Center of Gravity (CG)
The point at which a UAV would balance if it were suspended at that point

Certificate of Waiver or Authorization (COW/COA)
An FAA grant of approval for a specific flight operation. The authorization to operate a UAS in the National Airspace System as a public aircraft outside of Restricted, Warning, or Prohibited areas approved for aviation activities.

DJI
China based drone manufacturer that has produced very popular, moderately priced units such as the Phantom series

Drone
An aircraft with no pilot onboard. Also known as Unmanned Aerial Vehicle (UAV) or a Remotely Piloted Aircraft (RPA)

Electronic Speed Controller (ESC)
Controls the speed of the motor. Serves as the connection between the main battery and the RC receiver.

First Person View (FPV)
A method used to control a radio-controlled vehicle from the driver or pilot's viewpoint, commonly done using a smartphone, a tablet or specially designed goggles

Fly Away
Unintended flight outside of operational boundaries (altitude/airspeed/lateral) as the result of a failure of the control element or onboard systems, or both.

Fly-Away Protection System
A system that will return the UAV safely to the surface, or keep it within the intended operational area, when the link between the pilot and the UAV is lost

GoPro
A compact, lightweight and rugged high-definition personal camera, often used in extreme action video photography that is wearable or mountable on vehicles. Able to capture still photos or video in HD through a wide-angle lens, and can be configured to work automatically with minimum intervention, or remotely controlled.

Global Positioning System (GPS)
A space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil and commercial users around the world. It is maintained by the United States government and is freely accessible to anyone with a GPS receiver.

Ground Control Station
A system of software and hardware receiving telemetry data from an unmanned aircraft to monitor its status, and transmit in-flight commands.

Gyro Sensor
Gyro sensors, also known as angular rate sensors or angular velocity sensors, are devices that sense angular velocity. Used both in UAV's and Cameras.

Gyroscope
A device for measuring or maintaining orientation, based on the principles of angular momentum

Hexacopter
A rotorcraft with 6 rotors

Hobby Grade
A distinction between a toy and a unit that is more advanced, durable and adaptable

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, typically used to maneuver aircraft, including unmanned aerial vehicles (UAVs). An IMU allows a GPS receiver to work when GPS-signals are unavailable, such as in tunnels, inside

buildings, or when electronic interference is present and it is the main component of inertial navigation systems used in aircraft. The data collected from the IMU's sensors allows a computer to track a craft's position, using a method known as dead reckoning.

Intervalometer
A device which counts intervals of time. In photography, intervalometers are used to trigger exposures. Used in aerial photography to delay the start of picture taking by an unattended camera until sometime after takeoff and separating multiple exposures in time, and thus distance as the vehicle containing the camera travels, to obtain the 3D effect (stereoscopy). To obtain the 3D effect each image should have about 60% of the surface in common with either the preceding or following image. The interval is calculated as a function of the altitude and speed of the vehicle; shorter intervals for low altitude and high speed.

JPEG
A filename extension for digital images

Kite Aerial Photography (KAP)
A camera is lifted using a kite and is triggered either remotely or automatically to take aerial photographs

Lithium Polymer Battery (LIPO)
A rechargeable battery of lithium-ion technology in a pouch format. LiPos come in a soft package or pouch which makes them lighter but also lack rigidity

Line of Sight (LOS)
Flying while watching the UAV and keeping it within sight at all times

Maximum Takeoff Weight
The maximum allowable weight for takeoff (including payload).

Milliampere-hour (mAh)
One-thousandth of an ampere-hour

Mobius Camera
A very sophisticated mini camera, measuring 1 3/8" x 2 1/2" x 3/4" inches and weighing only 1.4 ounces capable of recording 1080 HD video

Multicopter
A rotorcraft with more than two rotors

Multiwii Copter
An open source software project aiming to provide the brain of a RC controlled multi rotor flying platform. It is compatible with several hardware boards and sensors.

Octocopter
A rotorcraft with eight rotors

Original Equipment Manufacturer (OEM)
Parts manufactured by the original manufacturer of the vehicle

Over the Horizon
The condition where the control station and the UAV are beyond line-of-site from each other

Payload
The carrying capacity of an aircraft, usually measured in terms of weight

Pilot in Command
An unmanned aircraft that is flying in a state of direct control by a UAV operator (i.e. not in autonomous flight).

Pitch
Changes in the vertical direction the aircraft's nose is pointing

Point of Interest
A target location for the capture of remotely sensed data by a UAV's sensors (i.e. video, still or multi-spectral imagery).

Pre Flight Planning
The activities conducted by the pilot and flight crew prior to takeoff to ensure that the

flight will be conducted safely and in accordance with all applicable standards and regulations. The activity includes, but is not limited to, such things as checking weather, route of flight, airspace, equipment configuration, support personnel, terrain and communications requirements.

Quadcopter
A rotorcraft with four rotors

Radio Controlled (RC)
Radio Controlled vehicle or aircraft

Ready to Fly (RTF)
A UAV that comes completely assembled and bound to a transmitter and is ready to fly when it is purchased

Return To Launch (RTL)
Return the aircraft to the "home" position where it took off

RX Microcontrollers
RX stands for Renesas eXtreme, signifying extreme performance and usability

Sense and Avoid
The capability of a UAS to remain well clear from and avoid collisions with other airborne traffic. Sense and Avoid provides the functions of self-separation and collision avoidance to establish an analogous capability to “see and avoid” required by manned aircraft.

Small Unmanned Aircraft System (sUAS)
A small Unmanned Aerial Vehicle, typically less than 55 pounds

Telemetry
A highly automated communications process by which measurements are made and other data collected at remote or inaccessible points and transmitted to receiving equipment for monitoring

Throttle
A device controlling the flow of fuel or power to an engine

Toy Grade
Mass market UAV units that are sold at retail stores

Unmanned Aerial System (UAS)
The unmanned aircraft together with its ground-based controller, and the system of communications connecting the two

Unmanned Aerial Vehicle (UAV)
An aircraft with no pilot onboard

Ultrasonic Sensor
Also known as transceivers when they both send and receive, but more generally called transducers, work on a principle similar to radar or sonar, which evaluate attributes of a target by interpreting the echoes from radio or sound waves respectively

Vertical Take Off and Landing
The capability of an aircraft to take off and land vertically, transferring to or from forward motion at heights required to clear surrounding obstacles.

Visual Observer
A UAS flight crewmember who assists the UAS pilot in the duties associated with collision avoidance. This includes, but is not limited to, avoidance of other traffic, airborne objects, clouds, obstructions, and terrain.

Waypoint
A reference point in physical space used for purposes of navigation

Yaw
Turning left or right on the vertical axis of the aircraft