What is a UAV (drone), how does one control it and what can it be used for?

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In recent times we have heard a lot about " *drone* " or " *UAV* ". This is a type of **unmanned aircraft used for many purposes** , from flying surveillance and destroying military targets to taking photos, filming or even delivery . pizza. And of course, the UAV is not a toy, so having it fly to the sky has many rules to follow. In this article, I will introduce you to the concept of UAV, the way airlines manage the UAV as well as the benefits and risks of this aircraft.

What is a UAV?

According to the US Federal Aviation Administration (FAA), the drone or unmanned aerial vehicle (UAV) is an unmanned aircraft. " *It can have many shapes, sizes and serve different purposes. They can have a wide wingspan like a jet or as small as a radio-controlled model airplane* ."

Many argue that a **radio-controlled aircraft developed by** the Royal Navy in 1930 was the first form of modern drones today. By the 1960s, the UAV was fitted with cameras and served during the Vietnam War. **In modern times, the drone is also equipped with many other complex weapons systems** . In addition to military use, the UAV is also used for civilian purposes such as delivery, filming, photographing, etc.

So if an airplane has a pilot inside but it is set to fly automatically and is guided by GPS, is it called UAV? Of course not, because there was still the presence of people in the cockpit, and they simply did not control the aircraft for a short time. Meanwhile, the drone must be able to operate almost fully without ever needing someone to appear in the cockpit.

And to do that, people had to develop so complex remote control systems. At a higher level, it is even more difficult to want an aircraft that is fully capable of flying without human intervention. It is for this reason that the International Civil Aviation Organization (ICAO) divides the drone into two main categories:

1. **Self-propelled aircraft** (currently less likely to occur in practice for safety reasons)

2. **Remote control aircraft** (more common appearance)

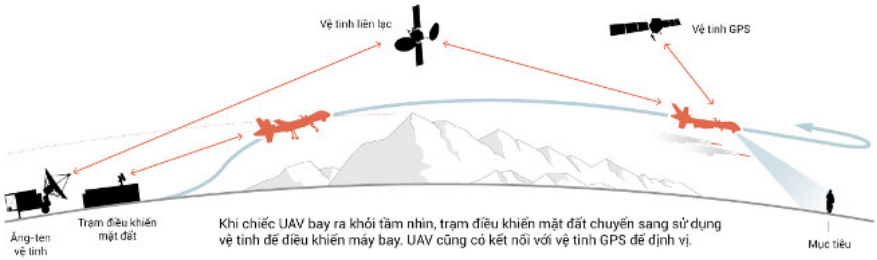
So if I play a model airplane, is it called a UAV? I was standing in the remote control, I didn't sit in the plane of the plane, so it must be a drone, right? The answer is yes and no. According to the FAA definition, model aircraft are also UAVs, but there is a mandatory rule that model aircraft are only allowed to fly in the driver's vision. Meanwhile, the true UAVs can fly very far, surpassing tens, hundreds of kilometers or even more.

Model aircraft are actually the "ancestors" of the UAV . It began to be built centuries ago for the purpose of testing aircraft design theories. Some models of smaller model aircraft are bought by aircraft lovers for entertainment and passion. And most of them are controlled by hand-held radio sets, while according to the Aviation Model Academy (a non-profit organization established to promote model airplanes), the UAV is usually controlled by computer systems, not just radio waves.

How are UAVs controlled?

With short-range UAVs, control can be done via radio waves, similar to model aircraft that you often see. In these cases the control station, or controller and UAV will talk directly.

But with long-range UAVs, it is different from the weather conditions, obstacles and the curvature of the earth's surface, but the radio signal cannot go directly from the station to the plane. That is why one must pass an intermediate satellite to ensure that the signal is still strong enough, that the UAV can fly hundreds, thousands of kilometers, still under control. This way, military pilots can sit in the United States and control a UAV Predator in Afghanistan or Iraq.



Who controls the UAV?

In the US Air Force, there is a group of very well trained pilots to control the drone only. Thanks to modern technology, they can sit at the base to fly the plane, but that doesn't mean they lack flying skills.

Sean McEntee, who has long been a model airplane driver and currently serves the US Air Force for drone driving, said he has done many monitoring missions in Iraq and Afghanistan. He explained that controlling the drone is much more complicated and " *not just sitting in a box and watching the plane fly around* ". Most UAVs, he said, are controlled by a system that is almost like the cockpit of a commercial aircraft, which also has a joystick, and also has switches and various buttons.

It is also for this reason that many drone pilots often do not mention the word "drone" because it does not fully describe the skills needed to control flying vehicles in real terms. Instead, they prefer to use UAV or RPA (command pilot aircraft).

And you, rightly, who are reading this article, can also drive UAVs, of course, the planes must then be less complicated and easier to control, such as the **Phantom drones that** are being circulated during the time. recently. Such airplanes don't need a complicated computer system; instead you can use a radio controller, or even a smartphone and tablet, to drive an airplane.

What is the unmanned first-person plane?

A "first person view" (FPV) aircraft is equipped with a camera and transmits real-time video to ground pilots. The vision will look at the image displayed on the screen like what he / she can see if he is sitting in the cockpit. Based on that, they will control the plane in the desired direction.

Thus, FPV aircraft is actually a small group of UAVs, not a completely different type of aircraft. It is the opposite of UAVs that only fly by GPS or fly by analyzing images directly on the vehicle.

Until now, most FPV aircraft have been operated by military countries. For non-military purposes, FAA requires users to register and be approved to have the right to operate the UAV. Of course, if playing a model airplane or a small drone to film, take photos without photos, there is no need for permission, but the mandatory rule is that the plane must fly in the driver's vision, and they must Keep a safe distance from the residential area, including the stadium or air shows. When it is necessary to record in crowded events, FAA will issue licenses depending on the specific situation.

So are the "drones" being widely sold on the market today as UAVs?

We can also view them as UAVs, although their control is also required to follow the rules of model airplanes. And you note, I **HIGH to see drone as a kind of PLANE, NOT TO PLAY** .

If your drone is 20kg lighter and you don't use it for commercial purposes, don't drive it " *within 150m from a crowded area, or within 50m if there is only one person, vehicle or building* ". Passing the 20kg mark, you will have to ask for permission (in the US, in Vietnam, I cannot find any documents about it) to drive a drone, and you will also have to prove to the FAA that you are " *competent force* "to control it. The drones of this type can only fly up to 500m and fly at maximum 122m only, if you want to overcome these milestones, you must ask for permission.

You are also not allowed to take photos, record videos or illegally monitor other people with drones. In other words, you must not abuse drones to violate the privacy laws enacted. It's like you're not allowed to climb a tree in your yard to take pictures of neighbors and neighbors.

Currently, there are about 300 companies and public organizations in the United States with the right to drive drones. Most of them are film studios, photography companies and stations like BBC or ITV. Recently, Amazon has been allowed to fly drone test by FAA for the purpose of " *researching and developing Prime Air service* ".

Paul Cremin, head of the US Department of Transportation's aviation safety division, said: " *People are becoming more and more conditioned, just as the Internet is becoming more popular and people are looking for different ways. To use this technology . We have heard many stories about Amazon shipping to your door with drone and I am sure there will be many other similar applications coming out* ".

How much does a drone cost?

Small **drones flying in the house, in the garden cost** only a **few hundred to a few million** , but **if you want more complex things, attach more modern photo equipment, a few dozen or a few hundred thousand dollars.** have all. And of course you can't buy a US Army Predator or Global Hawk, unless you hack and take it as in action movies.

Application of current UAV?

Pretty much, can tell a few things like this:

Military:

1. Flight monitoring, support ground forces (USA and many pretty countries are using)
2. Track aerial targets, transmit live video images to the base
3. Destroy targets (with weapons UAVs)
4. Flight training
5. Review, detect and support mine and mine clearance (Laos is applying)

Non-military :

1. Delivery (such as Amazon or Pizza Inn for example)
2. Weather forecast, meteorological information collection (NASA and US weather agency used)
3. Filming, taking photos from the air
4. Build a map, especially 3D maps (use laser scanning systems like LIDAR)
5. Wildlife protection (some protected areas in the US and Sumatra, Indonesia have begun to apply)
6. Used in agriculture (spreading fertilizer, pesticides .)
7. Search and rescue (a person with a car accident in Canada has been discovered and rescued thanks to drones in 2013, can add heat sensors to detect people easier)

Risk of drone?

Unmanned aircraft can become extremely dangerous when falling into the wrong person , according to Eric Schmidt, Google president. For example, in some movies, terrorists can occupy drones to attack innocent people. Inexperienced drone drivers can also violate flight safety and cause the drone to collide with people, vehicles or buildings and cause serious consequences. Not long ago a commercial plane almost hit the drone at Heathrow airport, causing investigators to take part.

Or, as your neighbor drives a drone to sneak a picture, are you comfortable? Probably not. More seriously, drones can be used by businesses to spy on their opponents and take unfair competition measures. Recently a drone also flew into the sky above the White House, causing agents to shoot it down.

Then what if the control between the drone and the driver is lost? Is the drone smart enough to fly back to its original position or does it keep flying until the fuel runs out, then falls on someone else's head? Is this connection safe and does it affect other types of wireless waves? If yes, how serious? How will the drone fail and drop the drone itself (in the context of having a lot of military UAVs falling every year in the world for technical reasons)?

There are still many controversies about UAV. Currently, laws on drones are still being studied by many countries in the world to balance the benefits that UAV can bring, but still ensure national security and safety for their people. FAA, ICAO or CAA are also active units involved in the process of enacting laws on UAV