Send in the Drones:

Everything You Need to Know About Unmanned Aerial Vehicles and How They Will Affect Your Life

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Chapter 1

Introduction

Drones have been around for a very long time, they are found in the airspace in the USA and other places around the world such as Japan. They seem to be more popular now than ever before. They are used for commercial needs, personal needs, and even by the military.

One of the many reasons that various government agencies rely on them is that they save money. It is less expensive to pay for drones to watch for potential drug deals, cattle thieves, and even illegal immigrants trying to get across the border than it is to pay for the man power to be those eagle eyes.

Not everyone is a fan of drones though, and they do worry about them. They feel that their safety and their privacy may be compromised by them. We will cover that in a later chapter. While there are some risks in place, the benefits of drones far outweigh the risk of someone using them for their own personal gain.

They have been in use since the later part of the 1800's. They were used in several wars including World War I and World War II. Of course what we see today in terms of drones is far different than those early prototypes.

Even if you haven't paid much attention to drones until now, they have been widely used for quite some time. We will cover the key points of their history in the next chapter. With that in mind, drones aren't to scare anyone and they aren't government spy tools on citizens.

Drones are offered in many different shapes and sizes. There are some that called micro drones as they aren't any larger than a bee that you would see flying around. There are Federal Aviation Administration (FFA) regulations in place that mandate how they can be used, who can use them, and even where they can be used. All of that will be covered in future chapters.

The use of drones is becoming more personal than just military or business use. That is what is opening up the demand for them. There are changes to the laws coming up, and those will also be covered in a later chapter. They were even used in the 2012 Winter Olympics.

Drones are coming into the visual line in all capacities. They aren't just a military tool anymore. They aren't just for personal use in hobbies. They are going to start being used commercially. They are also used for safety, security, and for emergency situations.

Some of those reports over the years that someone has spotted a UFO in the sky are believed to be due to drones. They could appear to be a foreign object that they aren't familiar with. The fact that many drones are solar powered and they can hoover for long periods of time in one place only further makes this mistaken identity more common.

Thanks to the technology offered, drones continue to get better and better. Some of them are huge with missiles and weapons on them. Others are very small and they can be undetected. While not everyone is a fan of drones due to privacy concerns and other details, learning about them can open up the idea of accepting them more readily into our society. Both on a personal and a commercial level.

There are experts that expect there to be as many as 30,000 drones in the air at any point in time by the year 2020. Such information was recently reported in the Washington Times. This information certainly got the attention of those that don't really understand all of the possible uses for drones.

As you read through the information on drones, you will realize that they do hold a great deal of potential and benefits. They are also a method of assistance in many realms that you may not have initial thought about. Once you learn about them, you will agree that drones and the technology they offer are quite spectacular!

Chapter 2

History of Drones

Technology that is found around the world continues to move forward. Some of the elements that are created from it change the way we view things forever from that point on. One of those inventions is the drone. The early ones were referred to as unmanned ariel vehicles (UAVs).

A common question is what is the difference between a drone and a cruise missile. The difference is that a drone is able to be recovered after the mission. It is true that some of the drones can carry ammo and fire at a given target.

Austria Attack on Venice

The first recorded use of UAVs was in 1849 in Austria. They were used to attack Venice by balloons dropping down. Many of them did, but the Austrians didn't account for the wind. Some of those balloons of explosives actually traveled back to Austria before they exploded upon impact.

World War I

In 1916, UAVs were used in World War I to carry weapons to various destinations. They were fast and they were referred to as aerial torpedoes. They weren't used as often as people thought though. There were plenty of

designs in the works for them through 1918. However, the United States government didn't want to be too reliant on them during the war.

World War II

In 1935, a prototype was introduced to the US government by Reginald Denney. Approximately 15,000 of these drones were manufactured and used in World War II. By 1938, they were commonly used by both the US Navy and the US Air Force.

Nuclear Testing

In 1946, drones were used for a variety of types of nuclear testing. Explosions were created and different prototypes of drones were sent through the destruction to see how much damage would occur to them. It is believed that the Soviet Union also conducted such testing around the same time period.

Vietnam War

Beginning in 1959, drones were a just benefit in the Vietnam War. This continued into 1964. It is believed that only about 6 of the drones used in this war were able to be shot down by the enemy.

United States Customs and Border Protection

Since 2007, drones have been used by the US Customs and Border Protection. This is part of an effort to reduce illegal immigrants from crossing the border. It is also in place to assist with reduced the risk of drug trafficking events at the border.

United States and Afghanistan

They were used to fly unmanned over Afghanistan beginning in 2002. This was during the hunt for Osama bin Laden. The decision to use drones in such a manner was part of the updated security plans after the horrific terrorist attacks of 09/11/01.

Emergency Response

In 2005, it was requested for Drones to be sent to look for people who may need to be rescued after Hurricane Katrina. However, the FAA didn't have such authorization in place yet. That was changed in 2006 and drones can be used for future emergency types of situations.

This includes searching around for people that may be trapped or unable to reach a safe location after a natural disaster or after a vehicle accident. Many forest areas are too dense for airplanes to get close enough without a risk of a crash. The same is true in some mountain terrains. The use of drones to look for such individuals could save lives.

There has been the suggestion to use drones to help with looking for people in avalanches or that got lost hiking. The difference is that drones

can get there quickly and safely compared to the many precautions that have to be implemented before a search and rescue team can get to that location.

Chapter 3

Advantages Drones Offer

There are quite a few advantages that drones offer. This is why they continue to be a big part of society for many realms. They may be a nuisance on some level and people do complain about the noise and privacy issues. However, what they offer is well beyond such complaints.

Price

Some will argue that drones are expensive, but not when you take a look at what they replace. The cost is far less than hiring more people to take care of certain jobs. The fact that it has also helped with catching various criminals means less drugs on the streets.

Drones are faster and less expensive to build than aircrafts. Should they be damaged or destroyed, then there is going to be less money involved with them. The fact that drones can be made in sizes that meet the need allows for fuel savings to also be there. Since most are solar powered, that also reduces the fuel costs of operating aircrafts.

Harder to Compromise

An aircraft can be compromised, and that can put the humans on board at great risk. The aircraft that is compromised can also be used to cause harm

to other people or to structures. Drones are very hard to compromise. The worst case scenario is that they get shot down and destroyed. However, the enemy isn't able to capture them and use them for their own personal gain as they can with an aircraft.

Safety

Drones are safer than sending men or women into various dangerous situations. That is why so much of their use has been through the different branches of the military. They can get into tighter areas too which means that there is more safety in terms of reducing the risk of an accident or an aircraft crash.

Manpower

Drones can replace the manpower of a large number of men and women. The savings can add up very quickly. Not only in terms of wages for those employees but also for transporting them, food, and lodging.

Saves Lives

Drones are unmanned, and when they are destroyed or shot down, there are no lives on them lost. The number of drones that were shot down in World War I and World War II was very low. However, the number of them shot at and destroyed over Afghanistan was extremely high. If they had carried any passengers, they likely would have died.

There are plenty of high risk jobs out there that put firemen, policemen, and warriors in the line of danger. The use of drones has been proven in many situations to save lives by not having any humans in them. They have also saved lives by sending drones in to emergency situations. They can often get there before humans could. Time is often of the essence in such situations for survival.

Reduces Errors

There can be some sticky situations when it comes to war. The use of drones with weapons instead of men or women onboard with them can help to reduce errors. This includes releasing weapons too soon, without authorization, or over the wrong targeted location.

Testing

Being able to test drones in different situations allows for better construction of other aircraft. It helps to identify safety concerns and problems that otherwise may not have been identified until a serious disaster had taken place.

Secrecy

Due to the small size of some drones, secrecy that they are even in place can take place. This is important when there are military operations in place, when there are possible drug trafficking issues to verify and stop, or when there are possible theft actions taking place.

PTSD

Many men and women in the military suffer from PTSD (Post Traumatic Stress Disorder). This frequently is the result of being involved in combat. Many experts believe that by sending in drones to take part in what they call the "drone war" zones then they can reduce the effects on these military personnel.

There is a huge difference between being involved in strategies that guide drones with weapons to certain areas and they know that people will be killed. This is quite different than them physically being in that location and them releasing weapons or firing guns at the enemy and being involved on such a personal level with killing them in order to protect the greater good of society.

Hours of Operation

There are only so many hours of flight time that humans can cover before they must take a break. Their bodies and their minds simply can't continue to be alert and function without sleep. Drones can stay in the air and around their target area without such breaks being required. Since they are unmanned, they can stay in place for days, weeks, and even months or years if they have to.

Improved Structure Inspections

Routine inspections should take place for bridges, buildings, and they can be dangerous to complete. A bridge has high points and there is also the underneath of it to consider. Getting humans in those places safely takes time and it is expensive. The use of drones to review structures from all angles and to take photos is a great alternative. The work can be done in less time and with a great deal of accuracy.

Chapter 4

Commercial Use

There seems to be some confusion about the commercial use of drones. They are rules and regulations but they are often hard to clarify in some areas so those gray locations can allow someone to get away with using them commercially.

That is because someone can legally use a drone for a hobby. They do have to keep it in sight of them at all times though. For example, someone that is going to take photographs can get terrific ariel shots with the use of a drone.

One way that people get around the regulations in place is by setting up a non-profit business or stating that they are a hobbyist. Both of these classifications allow them to operate drones without it being considered a violation of commercial use.

They are able to collect payments too. They have to do so in a manner that will classify them as donations though. While the FAA is aware of this, they haven't made it a huge area of concern. They aren't investing much time or effort in getting those practices to end.

The FAA regulations state that drones can't be used for commercial gain. However, the US Congress has required the FAA to change this. Beginning in 2015, the FAA will have to allow drones into commercial airspace.

It was announced 12/30/13 by the FAA that six states will be able to develop testing sites for drones. These six states are:

- Alaska
- Nevada
- New York
- North Dakota
- Texas
- Virginia

The reasons that these locations were selected are due to the variations the offer. The FFA wants testing that includes different types of:

- Airspace
- Climate
- Terrain

According to the FFA, they believe this is a huge step towards gathering sufficient and reliable data. They feel this information will assist them with creating the rules and regulations that will need to be in place for commercial drone use in 2015.

The testing sites are going to create quite a buzz about drones. They are also going to generate an undisclosed number of new jobs in those states. Not everyone is happy with this though. They want drones to be approved for commercial use without all the red tape of rules and regulations.

The FAA though seems to be taking all the heat when they aren't the only ones with concerns. In fact, a survey in 2013 showed that 42 states agreed to bills being implemented in their states that restrict the use of drones. This mainly has to do with privacy concerns.

There are eight states that have already imposed such bills. They want to be ready for the FAA changes in 2015. It is expected that many more states will also be getting these bills acted upon and implemented before the commercial use of drones is accepted by the FAA.

Too Many Drones

One of the biggest worries that the FAA has about commercial use of drones is that there will be too many of them. There has been talk about using drones for fast deliveries by some of the larger retailers including:

- Amazon
- Sears
- Wal-Mart

This could literally result in hundreds of drones being out there flying around as the orders are in route to their destinations. This could dramatically increase too around the holiday season.

There are all things that the FAA has to be cautious about. They need to put rules and regulations into place that will ensure there isn't chaos from the commercial use of drones.

The most common commercial ventures that you could see trying to get approved for drone use include:

- Business Logistics
- Insurance and Property Valuation
- Journalists
- Motion Pictures
- Oil and Gas Companies (Pipelines)
- Photography
- Real Estate

The experts believe that there will be growth in 2015 in the area of commercial use of drones. However, they believe lots of commercial entities are going to be disappointed and frustrated by the lack of freedom they have with it.

Manufacturers

From a manufacture's point of view, the ability of commercial use of drones is very exciting. They have already started with development and promoting of what consumers can buy in this area. They are hopeful they can generate a great deal of profit by selling drones to the commercial sector.

Some of the top manufacturers for commercial drones include:

- DJI Phantom – This is considered to be the first mass market drone. There are four configurations that consumers can pick from. They are all designed to be very simple to operate and they range in terms of the weight they can handle. The Quadrocopter is one that is getting a great deal of attention. They also offer the 2 Vision Quad.

- Parrot – This is a very small drone with a configuration that looks very similar to a butterfly. It is also very cost efficient which is perfect for a business that doesn't want a huge investment in this type of marketing as they aren't sure what the return on it would be for them.

FAA Fight

The FAA isn't going to give up without a fight though. In March of 2013, they appealed a Federal court ruling about the use of drones for commercial needs. The FAA is also not pleased that the charges against Matt Murphy in January of 2013 were dropped.

The charges against Murphy include a $10,000 fine by the FAA for wrecklessly flying a drone at the University of Virginia for a photography

shoot. The law dropped the charges as they stated there are no enforceable FAA rules and regulations at this time that apply. With this in place, the precedence in the court of law has been set. The FAA has to come up with some rules and regulations so that what they deem as violations can be prosecuted.

The outcome of the FAA appeal regarding the use of drones for commercial use as being legal will be one that is watched by many. There may be some compromises made in the end for all parties involved to be happy with the results.

Chapter 5
Military Use

Plenty of examples of the military use of drones were covered in the history section. Yet it is important enough that it needs to be further addressed in its own chapter as well.

It isn't only the US that has used drones either, but many people that it is only part of their military defense system. Instead, the use has become a world wide effort and in some ways that is good and in others that is one more weapon that can be used against each other.

Al Qaeda

Drones were used in 2002 against Al Qaeda in Yemen. In 2008, they were significantly used in the Bush Administration against Pakistan. They have continued to grow against the Al Qaeda in the numbers used and the locations used in the Obama Administration.

The CIA is in charge of a great deal of the drone use against Al Qaeda. However, there is also a very elite group that is also using them significantly for military strategies and maneuvers. This includes the Joint Special Operations Command (JSOC). They have mainly relied on drone use in Yemen and Somalia.

The CIA, JSOC, and other military units compile what they refer to as the "kill list". Meetings are held and the list has to be approved by the Pentagon. Once that has been done, the list has to be approved by members of the White House cabinet and the President.

The National Counterterrorism Center often sends recommendations for who they feel should be added to that list. While this "kill list" is quite controversial, many experts believe it is a necessity. It is a way to keep people safe day after day. No one wants to allow a terrorist attack like we experienced on 09/11 to occur again. We either fight to eliminate those in charge of such terrorist acts or we give them the indication that they can continue in their plans.

Israel Concerns

Israel has concerns over Garza and Lebanon being able to send exploding drones. They already have arsenals of rockets that they can use against Tel Aviv. The Chief of Israel doesn't like the idea of being in a position where they have to cope with numerous AUVs. They feel that they would be coming from both the South and the North.

There have been two confirmed reports of drones in the airspace of Israel. One of the occurrences was in 2012 and the other was in 2013. They weren't believed to have any explosives on them that were delivered though. Instead, it is believed they had cameras.

The objective was to take photos of the various possible defenses that Israel offers. However, they were both shot down by jets owned by Israel.

Due to such concerns, Israel has vamped up their information on drone technology and they have the vehicles to use for combat themselves if necessary.

Navy

It can be hard to protect in the water, and that is what the navy is in place to offer. The use of drones can help to improve the security as they can be launched in areas quite a distance from the actual naval ships.

Coast Guard

The US Coast Guard believes that the use of drones on a daily basis can help them to increase prosecutions by about 95%. However, they have strict restrictions and have to share drones with the Navy. Some of the projects in place though will allow them to use the drones up to 70% more than they are right now. The reason behind this is to get more security in place. Drugs are being pushed through the waters and the Coast Guard needs the drones to assist them with making drug busts and breaking down that illegal entity.

Drones and the War on Terrorists

Drones seem to a favorite weapon of the Obama administration in regards to the war on terrorists. They have been significantly involved in approved airstrikes both in Iraq and Afghanistan. An undisclosed analyst for the

military states that up to 95% of direct target killings in these countries since 2011 have been conducted with the use of drones.

Drone Data

Some people worry that the use of drones in the military are going to replace the number of people that they employee. That isn't really the case, but it can change the types of situations that the humans in the military operations are found in. For example, there are anywhere from 65,000 to 70,000 military personnel that work on compiling, interpreting, and using the data from drones.

According to a review of military operations, it is believed up to 100,000 personnel need to be dedicated to this particular type of work. As the number drones in use increases, so will the number of people that they allocate to such tasks.

These individuals aren't out there in aircraft where they could be put into a potentially dangerous situation. Instead, the drones are placed into those locations unmanned. This allows the military personnel to be able to do their work but without being in that location where the drones are dispatched.

Conflict of Drone War

There are plenty of countries out there that don't like the concept what is dubbed "drone war". Some countries have been protesting it they are

showing a higher level of hate for the US than in the past. The Pakistan militia has a campaign in place that says the US is spying on them. They also report that the US is killing innocent civilians.

A report compiled from the United Nations (UN) in 2010 also raised some concerns. Many allies of the US are hesitant to speak at all about the use of drones. They don't want to get into a conflict about it. The conclusion is that there is a lack of good information about drone use in the military. It has made many people, and even leaders of various countries uneasy.

Chapter 6

Other Drone Use

There are plenty of other possible uses for drones that the average person may not have thought about. As you read through these, you may identify a couple of them that you would be glad to consider implementing for your own personal use too.

Cinematography

Both amateurs and professionals enjoy the idea of being able to use drones for cinematography. This is the art of taking videos or action shots for movies or videos. Drones would be able to get up close to the action and to really capture what is taking place.

Such images could completely change what is used in the final production. It could add significant detail to what the viewer will be able to identify with in any given scene. The use of drones in films that capture animals in nature would also be explosive. It would allow them to be filmed in their natural habitat without any risk to humans going in and setting up cameras.

Drones are replacing helicopters for these types of shots. They aren't as loud as a helicopter. They also don't disrupt the surroundings like the air that is stirred up by a helicopter. There is also the savings of not paying people to be in the helicopter to get the filming completed.

Action Sports

Many people find action sports to be very entertaining. Some of the moves and the hits can take place so quickly though that it is hard to visually take it all in. Instant replays help but they don't always get the details that are controversial. A drone could be able to get up close and personal without it being an invasion of space for the athletes.

Some action sports have a referee that is right there with the athletes. They have to be close to see the action, but they also have to protect themselves at all times. They have to be ready to move quickly out of the way with the movements of the athletes. The use of drones could allow those referees to have a safer distance away from where all of the action was taking place.

Real Estate

Even though commercial use of drones isn't legal, it still happens. One of the big sectors where it does happen is real estate. Being able to take photos of properties from all angles is important. Capturing the home and the surrounding property from the air is a great way to capture the attention of potential buyers.

Photography

Both amateur and professional photographers use drones to get some very unique photos. They find that walking by certain elements doesn't offer

them the same moment to get the shot as an ariel type of view can. They can also use a drone to get those shots that would otherwise be full of people walking back and forth. You can't ask a busy street of people to stop while you click your photos!

Agriculture

Farmers and ranchers are using drones to help them with their business. They may have large areas of land but they don't want to hire many people to help them take care of it. They may be using drones to help them identify any problems with crop growth or with irrigation.

Ranchers can use drones to count cattle and they can look for those that may have been separated from the rest without getting on a horse and riding around endlessly. They can also use drones to help them identify any problems such as cattle theft in the area.

Both farmers and ranchers have to invest time and money in the upkeep of their facilities. The use of drones can be a reliable tool for surveillance and keeping on top of what is going on with their land. There are over 10,000 drones in use in Japan for agricultural purposes.

Law Enforcement

There are so many jobs that fall under the umbrella of law enforcement that can benefit from drones. For example, looking for suspects that are on the

run. The drones can find them and they can also determine if those suspects are armed or not.

Weather Observations

Getting into the heart of a storm such as a hurricane or a tornado isn't something someone wants to get themselves into. They are simply too unpredictable and the risk of injuries or death is too great. Drones can be used for weather observations as they can get photos from different angles very close to the storms. These drones are often destroyed, but they can provide a tremendous amount of data and information.

3-D Mapping

With the use of drones, 3-D mapping is becoming extremely popular. This process allows the landscape to be carefully surveyed. Thousands of images can be taken in a small amount of time. The drones can produce better results that satellites for creating these 3-D mapping elements.

They can be guided by GPS so they don't have to be manually guided by a human. One of the main sources for this type of 3-D mapping is Pix4D out of Switzerland. The images that they had captured were a huge help with the Haiti relief efforts following Hurricane Sandy.

Wildlife Protection and Documentation

Many forms of wildlife are in danger of becoming extinct. Environmental issues, poaching, and other factors can make it hard to keep the numbers growing. Drones are a non-invasive way to protect wildlife and to also document where their habitat continues to be found. It can help with estimating numbers that remain in the wild.

They can also map roads that allow them to reach wildlife to offer help, to add monitoring devices, and to install cameras around a given habitat area. Drones can be used to help identify poaching activities and even capture those responsible due to the images that can be recorded.

One of the huge efforts in place right now is for conservation of Orangutans in Malaysia and Indonesia. The use of drones has proven to be far more effective to help them than efforts on ground due to the thick forest of their habitat.

Chapter 7

Privacy & Safety Issues

While there are plenty of benefits and uses for drones, not everyone is happy with them. Many people have concerns about privacy being violated. They also have concerns about safety issues.

Privacy

There are those that feel drones are going to be reporting what they are taking part in back to the government. They don't want their every move watched. They feel it is similar to having a surveillance camera on every corner. They do value their privacy and they don't like it being taken from them.

Some people think that drones just look unfriendly. They see them as a threat. One of the elements that many manufactures are working on is their attractiveness. They are hopeful that those opposed to them won't mind so much if they are brighter colors or more visually appealing. However, there are those that argue it is the privacy issue and not appearance that they are upset about.

Criminal Use

Criminals always seem to be able to find a way to use devices to their benefit. There is the chance that they would use the drones in order to help them case homes or businesses that they planned to rob.

However, the flip side of it is that with drones hovering around, crime rates may actually go down. Criminals look for a window of opportunity most of the time where there is little risk of getting caught. They look for easy targets such as people walking alone, not paying attention in parking lots, and homes that look dark and like no one is home.

With drones all over, they would know that there is a very good chance that they will be caught in the act. There is no denying an act occurred when it is captured on video. Knowing this could be going on would be a strong deterrent for the average criminal.

Personal Privacy

There are people that worry about small drones interfering with their personal privacy. This includes:

- Taking a shower
- Using the bathroom
- Getting dress/undressed
- Intimacy
- Conversations
- Work activities

They have the impression that drones could be everywhere that they are and nothing they do can't be seen by an undisclosed person or even the government. They want their privacy in their daily lives

Safety

Drones are very lightweight due to the carbon fiber used to make them. If they happen to get into severe wind or they don't respond to the fail safe, they could crash into a person, a vehicle, or even onto a busy highway. They could create some type of accident.

Animals may be scared and harmed by drones. They may get spooked and run into a fence or other harmful element. With small drones, there is the risk that if they stop working and fall to the ground, animals may try to eat them and that can cause them health issues. What about those that end up in the water? They could cause problems if they were consumed by aquatic life.

Noise

Depending on where you reside, you may be used to high levels of noise. However, others aren't and they view it as a type of pollution. They also feel that their privacy has been invaded due to the noise. It can be hard for them to sleep well, to go about their daily activities, and businesses can find it is hard to communicate due to such noise.

While a single drone in an area isn't going to be excessively noisy, people are concerned about the increased number of them over time. This is especially worrisome for those aware of the FAA changes for commercial use of drones in 2015.

Crowded Airspace

According to the FAA, there are already concerns with drones in the US due crowded airspace. There are fears that the addition of drones in the US in large numbers could further cause problems. They could result in flights being delayed, problems with detection of what is in the airspace, and more.

Privacy Legislation

Many states are looking into privacy legislation relating to drones. They are doing this now in the event that the commercial use of drones is able to be opened up in the near future. Such privacy issues involve limiting how drones can be used. If they are used for criminal acts or invasion of privacy, very stiff penalties should be in place.

They feel this would be a deterrent for individuals to use drones for their own personal gain or to violate laws that are already in place. The goal is to be able to offset such risks and issues before they would have the chance to begin. Many states also believe that by doing so, they can eliminate the fears of people that worry their privacy is going to be invaded and taken from them with the use of drones on a wider scale in society.

FAA Concerns

Privacy is also one of the concerns of the FFA regarding drone use. They have authorized 78 certificates for commercial use. They have already had to increase their staff to take care of those licensing issues and to address safety concerns from citizens.

The FAA is aware that many law enforcement entities in the US have purchased drone equipment. This includes the states of:

- Alabama
- Florida
- Texas
- Washington
- Virginia

These states are also addressing security issues as well as those complaints that the FAA has seen. They want their citizens to know they will be safe with the use of the drones in place. In fact, they enjoy the fact that they allow data to be collected in real time. Drones can be reviewed in terms of camera footage to gather information for crimes.

Such information can be instrumental for law enforcement to cut down on the time they need to conduct an investigation. The photos can also give them documentation and evidence they otherwise would not have been

able to have in order to successfully prosecute someone for their role in a crime.

The FAA says they have been cooperating with efforts by US states that want to use drones more for law enforcement. They have been doing so since 2010. However, they want security measures in place regarding who is going to be responsible for observing the drones and how they are used. The risk of that authority falling into the wrong hands is what the FAA wants to work to prevent.

The Department of Homeland Security is now in that mix too. In fact, they are currently looking into offering grant money for those states with law enforcement that would like to buy drones but can't afford it. Their mission is to keep citizens safe. This includes locally and on a National level from criminal and from terrorists.

They hope that citizens would be willing to give up a small amount of personal privacy in order to live in a location where there is less crime, less drug activity, and less risk to everyone. Then society as a whole has the ability to focus and to function in a way that gives everyone the best quality of life available.

Chapter 8

The Future of Drones

Drones seem to be here to stay, not just a passing trend. As mentioned the regulations are changing for them to be used commercially. They are used widely by the military and they are also used by private people. The demand for them will likely increase in the future.

Fail Safe Issue

Drones continue to be very advanced. Who has the ownership rights to drones that end up in private locations? Recently, a man in Denver realized his drone had drifted away. So he put up fliers around town so that anyone who may spot it can let him know.

The value of the drone is $2,000 plus another $400 for the camera installed on it. All he is left with is the transmitter. This was also what brought to the attention of consumers that there can be some glitches in the technology for drones. When the fail safe button is pushed, the drone is supposed to return to the takeoff spot.

That is why this man, who had lost sight of his drown by that point, pushed the fail safe. Then he went back to the launch area, expecting it to be there. It wasn't, and he assumed it soon would be. However, it never happened and he feels like the company owes him an explanation.

He isn't the only one with such a complaint though. There are numerous forums and reviews online about this very issue. This means it is a problem with the drones, not with the user.

With this negative publicity out there, manufacturers of drones have no choice but to make some better designs and to get them tested. They don't want sales of these devices to slow down due to people worrying about their investment getting away from them and there is nothing they can do about it.

Noise

There have been complaints about the noise drones create. They are quite loud and that can be disruptive to those around them. People have complained about them to their local officials, to state representatives, and even to the Federal government. As a result, we will likely see noise reduction as part of the future for drones.

Commercial Use

We touched on this in a previous chapter, but it is worth addressing here too. The future of drones is likely going to really grow in the commercial sector in the coming years. This is due to the fact that the FFA regulations that ban them from such use right now will be either modified or lifted.

Price

It is anticipated that the price tag associated with drones will decrease around 2015. If that is true, then there will likely be more of them in use. For some consumers, it is that current cost that prevents them from making the investment.

Facebook may Buy Titan Aerospace

The number of people that are familiar with the social media site, Facebook, grows all the time. They are in negations to buy Titan Aerospace with a price tag of $60 million. Why would they have such an interest? It is believed it would allow them to give people access to Facebook even where there isn't any internet access.

The buyout would then move into the next phase which is creating about 11,000 aerial drones. The model could be the popular Solara 60 which can hold up to 250 pounds. They are solar charged and they can remain at an altitude of about 65,000 feet for a period of up to 5 years.

CEO of Facebook, Mark Zuckerberg, believes the use of drones could be the way to break down the walls for internet access in countries where they haven't been able to. He also feels that this could create up to 140 million new jobs and also get more than 160 million people to end a life of poverty that they are currently experiencing.

Protecting the Boarders

Illegal immigration from other continues into the US continues to be a serious problem. The conditions for many of those immigrants are terrible too. They often hide in the heat and they don't get enough food or water on the journey. Those that do make it into the USA can create a stir due to the immigration laws.

Drones are used along with manpower to protect the boarders located to the North, South, and Southeast of the US. While there have been some pilot programs in place, a few of the drones have actually crashed. This means that some improvements will need to be done if this resource is going to be a reliable method of keeping illegals from crossing the border.

Projections

According the FAA, there will be smaller drones that become part of the airspace in the USA. By 2017, it is estimated that these micro drones will be everywhere. There may be as many as 20,000 of them by that point in time.

There are about 56 different government agencies that use drones. There are 63 active drone sites where they can be used. This doesn't include the 6 testing locations that were mentioned in a previous chapter. There are plenty of experts that believe the 21 Century is going to be the era of

drones rather than manned aircraft. It will change the world responds on many levels.

Chapter 9
Conclusion

While drones aren't new, they continue to be modified and offering better and better technology. They are offered in very small sizes that can be virtually undetected all the way to those that are very large and missile like. Some of them feature cameras and others have explosives on them.

The use of drones has been around for a very long time, both for surveillance and for military use. It is widely used in locations around the world for agricultural needs. The growth of it for protecting borders, for military operations, and for law enforcement is very encouraging.

The biggest challenge right now that is creating quite a stir is the decision to allow commercial drone use. The FAA has been against it but Congress is mandating it for 2015. This doesn't mean that they can be used anyway that people want though. The FAA is diligently working on testing sites so they can compile information. That data is going to be used to make rules and regulations that pertain to commercial drone use.

The ability to purchase a drone and use it for hobbies including photography is appealing. There are several manufacturers that make them and they are more affordable than you might think. These are made with a specific audience in mind. One that would like the perks but not anything

difficult to use or high cost. There are those that worry about drone use though. They have concerns about their safety and about their privacy.

This is going to be an area where additional legislation is going to have to be incorporated. Individuals have the right to speak up about what their concerns are. However, they also have a responsibility to be educated and well informed on the topic of drone use.

It does appear that drones are here to stay, and that they continue to offer plenty of advantages. They can be a money saving device. They can help in emergency situations to reduce the risk to firemen and policemen. They can also be launched quickly in emergency situations to try to aid survivors.

While not everyone is a fan of drones, it seems that the consensus is that the benefits they offer far outweigh the risk of injuries, the risk of privacy invasion at times, and the risk of people using them for their own gain that is illegal.

The FAA and other organizations including local governments are working hard to come up with laws that will hold people accountable with drones. Not only in terms of what they can and can't do with them, but serious fines and even jail time for violating laws and privacy via the use of drones.

Some communities are holding public forums and even have online resources. They are looking for feedback about drones and also offering information. They want to find out what people in their community feel about them being used. In some states and in some forms of commercial

business, this will help them with making some huge decisions about using drones or not. They certainly don't want to lose customers by doing so.

The power to implement the manpower to monitor drone use and drone violations then becomes the next part of that. There has to be an entity in place that will oversee all of that. While the FAA wants to limit what can be done, they really don't feel they have the manpower to be able to oversee all of it on such a large scale. They will have to find that balance as well work with other agencies that will have the power to oversee this as well.

Drones have changed a great deal over time in terms of what they look like and what we can expect from them. The advances we see in technology continue to drive them forward. There are some issues with them such as models that don't seem to have a good fail safe element to them. However, they can only continue to get better with time!