

ERRATICALLY WORKING DRONES



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INTRODUCTION TO DRONES

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INTRODUCTION TO DRONES

Drone a terminology is used to describe any vehicle that is unmanned. For a small drone i.e. A Quadcopter, Quadrotor, Quad rotor helicopter is controlled by four rotors, motors and propellers. The concept of this idea is to introduce an unmanned flying craft, here are many other types of UAVs (such as tricopters, hexacopters, and octocopters) that also fit the general description of a drone. A drone can only be considered a quadcopter, however, if it has four rotors.



Main body



Remote control device



Aerial camera



Energy device

The National Space Administration Committee

Micro-UAVs

empty weight < 0.25kg altitude < 50m speed < 40km/h

Light-UAVs

empty weight < 4kg takeoff weight < 7kg altitude < 120m speed < 100km/h

Small-size UAVs

empty weight < 15kg takeoff weight < 25kg

Medium-sized UAVs

empty weight > 15kg takeoff weight < 150kg

Large-sized UAVs

takeoff weight > 150kg

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INTRODUCTION TO DRONES

Characteristics of Drones

LOW ALTITUDE

- About 2 KM in theory, less than 120m in general;

LOW SPEED

- Nearly 15-100 Km/h for consumers use;

SMALL SIZE

- Generally belong to light UAV (<7 KG);



Signal	Frequency Band	Modulation
Command & Control	27 MHz, 35 MHz, 40MHz, 72 MHz, 328 – 352 MHz, 400 MHz, 433 MHz, 560 – 760 MHz, 915 MHz, 933 MHz, 1.2 GHz, 2.4 GHz, 5.8 GHz (More than 90% uses 2.4 GHz and 5.8 GHz band)	FHSS, DSSS, WiFi, Bluetooth
Downlink data (altitude, autonomy...)	Same with Command & control signal	Same with Command & control signal
Downlink Video	433MHz, 328-334MHz, 1.2GHz, 2.4GHz, 5.8GHz (More than 90% uses 2.4 GHz and 5.8 GHz band)	WiFi, analog PAL/NTSC, PSK, OFDM

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INTRODUCTION TO DRONES

TECHNICAL CHARACTERISTICS



Radio Controlled via FHSS/DSSS	Radio Controlled via WIFI	Radio Controlled via Bluetooth
<ul style="list-style-type: none"> • Wide spread (>80%) • Range: 1 – 3 KM • WIFI is often used for the video downlink • DJI MAVIC/ DJI P4P/ Mi/ 1080P/Mi 4K 	<ul style="list-style-type: none"> • Wide spread (<60%) • Range: 100m – 1 KM • Some are equipped with a FPV • DJI P3S/ DJI P3SE/ DJI SPARK 	<ul style="list-style-type: none"> • Low cost models • Range with approx. 100m • XIRO Dobby



USING DRONES IN A MEANINGFUL WAY

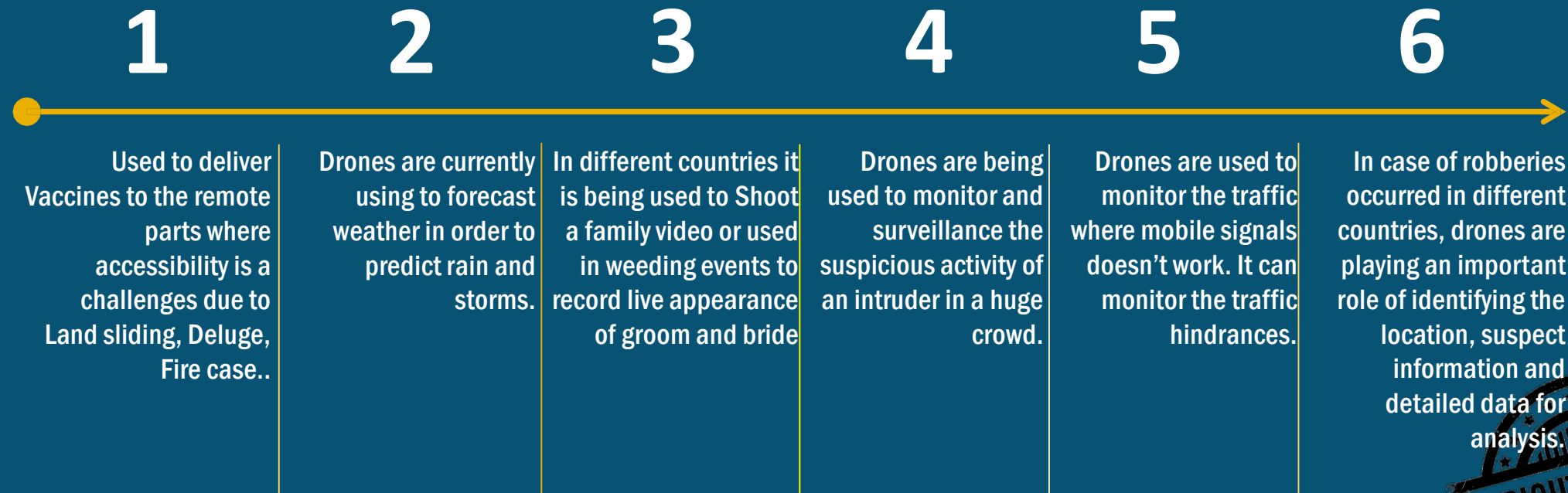
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USING DRONES IN A MEANINGFUL WAY

In recent years, a physical technology DRONE is used to minimize the health risks, drones can be used for marketing & advertising purpose. They can share the data making it easier for professionals in any industry to easily interpret and share relevant data. Here are the list of some usages of drones in a meaningful way.

POSITIVE USAGES



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USING DRONES AS A WEAPON AGAINST LAW

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USING DRONES AS A WEAPON AGAINST LAW

Considering the usage of drones in a meaning way, there are numerous impact by which drones poses a serious risk to public, safety, privacy, and security of human being, they are fascinating by their prices but becomes a critical issue for Law enforcement because of the device functionality which can used to commit more serious crimes i.e. Halt the communication system, signals jamming, disrupt air control traffic, and can interrupt the communication of Mobile Base Station.

NEGATIVE USAGES



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MONITOR YOUR DRONE IN AIRSPACE

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MONITOR YOUR DRONE IN AIRSPACE

To monitor your drone in air space there are different websites and online streaming that helps to identify a drone location one of the common web which identifies the drone location is <https://app.airmap.io> .

Similarly there are application which can identify the location of drone in

Android <https://play.google.com/store/apps/details?id=com.airmap.airmap&hl=en> and

for iOS <https://apps.apple.com/us/app/airmap-for-drones/id1042824733>



RESTRICTED USE OF DRONES IN AIRSPACE

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RESTRICTED USE OF DRONES IN AIRSPACE

Most of the countries have made their regulations regarding drones, different countries are covering the drones aspect from their Civil Aviation Authority since it comes under the flying device, there are some precautions provided by Aviation authority which should be kept in mind while flying a drone i.e.

- Drones must fly below 400 feet and at less than 100 miles per hour;
- Fly within sight and during daytime only;
- Can be used for Academics, Student research & development prior to the approval of FAA
- Fly away from borders, military, governmental buildings and urban centres;
- Fly away from airports and give way to any manned aircraft you see;
- Fly away from national parks and reserves;
- If flying over people, ask their permission prior, consider local cultures and always respect individuals' privacy right;
- Carry with you all your qualifications and your drone's manual (ideally translated in the local language). You might want to write down a little word in the local language to explain what you're doing that you can hand out to curious locals;
- Have a third party insurance to cover yourself and others;



LIMITATIONS & CHALLENGES

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LIMITATION & CHALLENGES

There are numerous challenges which this technology has made and also becomes a serious issue for those countries where privacy is the concern.

Here are some list of limitation which are temporary barriers and we hope that continues research will bridge these GAP(s):

1. Difficult of track the location of the Drone/quadcopter;
2. 100% restriction and recorded inventory of the owner of the Drone/quadcopter must be maintained;
3. Challenges in conducting the Digital forensic investigation against the device captured;
4. The one who is using drone doesn't know whether any other drone is being flying in the air space, communication with other drones and Radars for drone identification is currently missing;
5. Difficult to identify the owner of the Drone, purpose of the device, who programmed drone to do so, and in what way a device may have been improperly configured or managed;
6. Extracting and ex-filtering data from the drones because of remote wiping technology arises in drones devices ;
7. There is the possibility of cyber terrorism, which applies to both large and small drones. Like any digital system, drones and their control systems can be hacked, and the FAA will have to incorporate IT security and redundancy mandates to reduce the hackability of drones as part of any certification standards the agency develops.



THANK YOU

