



UAV for Geography and Geoinformatics



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Spaceborne

Satellite
Optical Sensor/SAR
700-900km



Space Shuttle

185-575km

Airborne

Aerial Photography

1.2-3.5km

Aerial Television

0.3km

Airborne SAR



10-12km

UAV (drone)

150m

Ground-based



Unmanned Aerial Vehicle, UAV

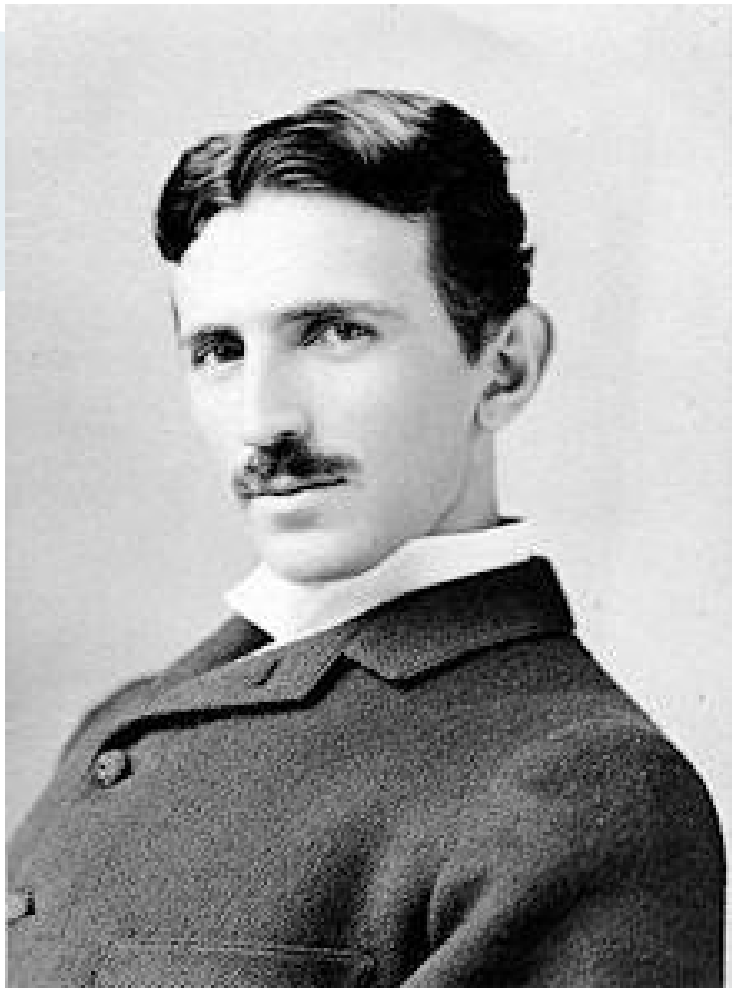
- It is an aircraft that does not require pilots on board. It is an unmanned vehicle that can control.
- The aircraft is controlled to fly automatically by a computerized system with a program installed on the aircraft, under the control of a remote pilot from the ground.
- Use jet engines or piston engines as the propulsion.
- They come in different shapes, sizes, forms, and uniqueness.
- Sometimes we call it a drone.
- Different from ballistic missiles, which are non-reusable weapons. Even if it's unmanned and remotely controlled.





Development of UAV

- From the past to the present, UAV have been used mainly in military affairs. It performs mostly scouting and attack missions, while UAV that perform successful attacks are reported to have It is easily damaged and often has errors.
- UAV are often performed in missions that are too difficult and dangerous to use manned aircraft.



Nikola Tesla

Born on July 10, 1856.

Died January 7, 1943.

No. 613,809.

Patented Nov. 8, 1898.

N. TESLA.
METHOD OF AND APPARATUS FOR CONTROLLING MECHANISM OF MOVING VESSELS
OR VEHICLES.

(No Model.)

5 Sheets—Sheet 1.

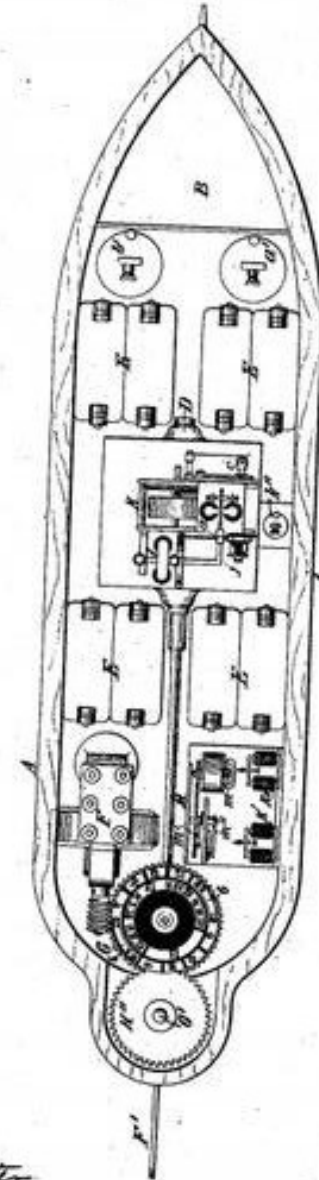


Fig. 1

Witnesses:
Raphael Ketler
George Schuff

Inventor
Nikola Tesla

Development of UAV

- 1915 Unmanned aerial vehicles were born from the ideas of Nikola Tesla, who was initiated by mechanical engineers. Unmanned Aircraft Fleet concept takeoff.
- 1916 The first unmanned aerial target by Archibald Montgomery Low (A.M. Low) was built, giving rise to the Hewitt- Sperry Automatic Airplane.
- In 1935, after World War I, Reginald Denny developed a Remote Piloted Vehicle (RPV) control system.
- 1980 - 1990 With the advancement of technology, aircraft began to be developed to be smaller, causing increased interest in unmanned aerial vehicles or unmanned aerial vehicles of the military because they are weapons that can be used for combat. Effectively reduce pilot risk and losses.

Development of UAV

(Hewitt-Sperry Automatic Airplane)



MQ-1 Predator

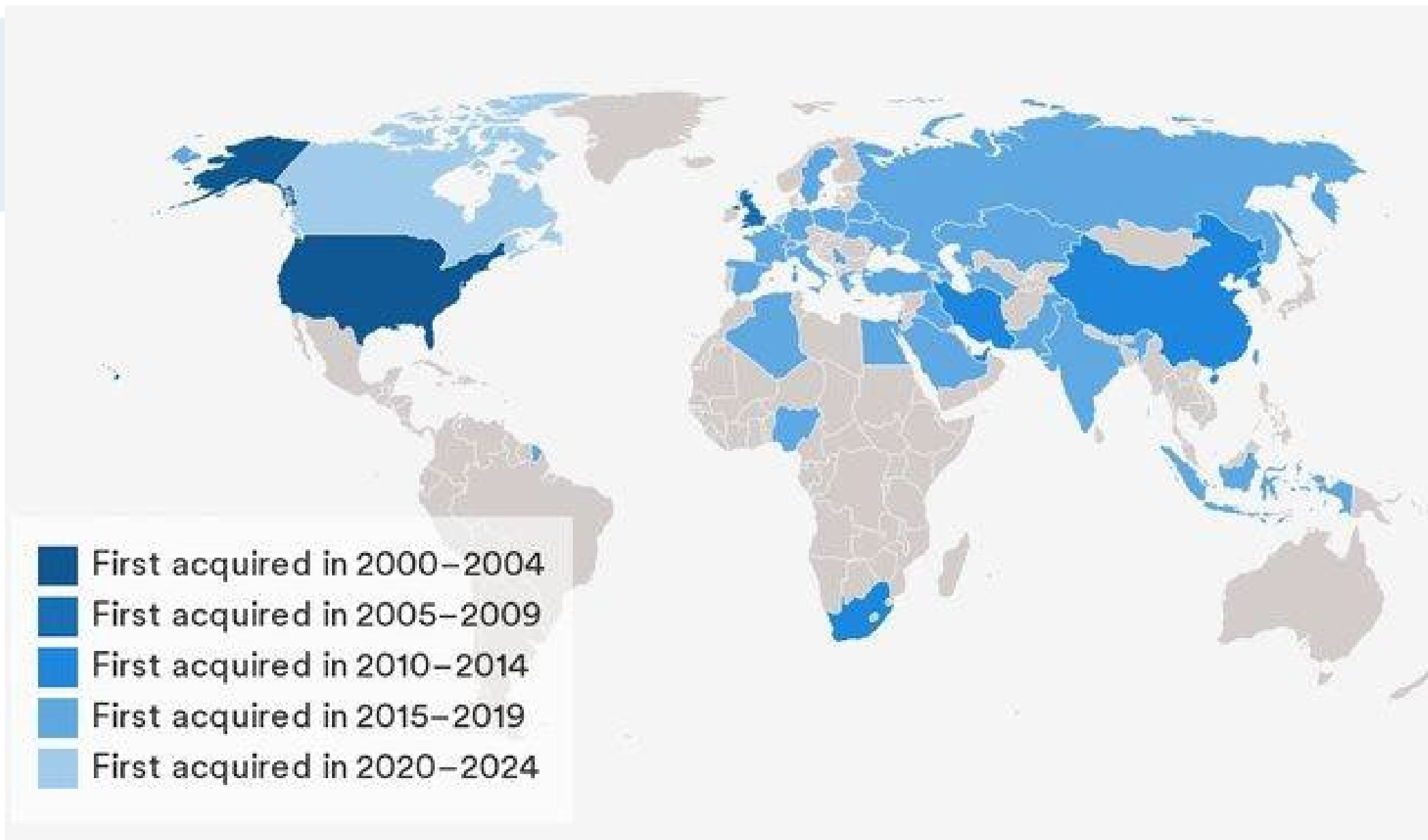


Development of UAV

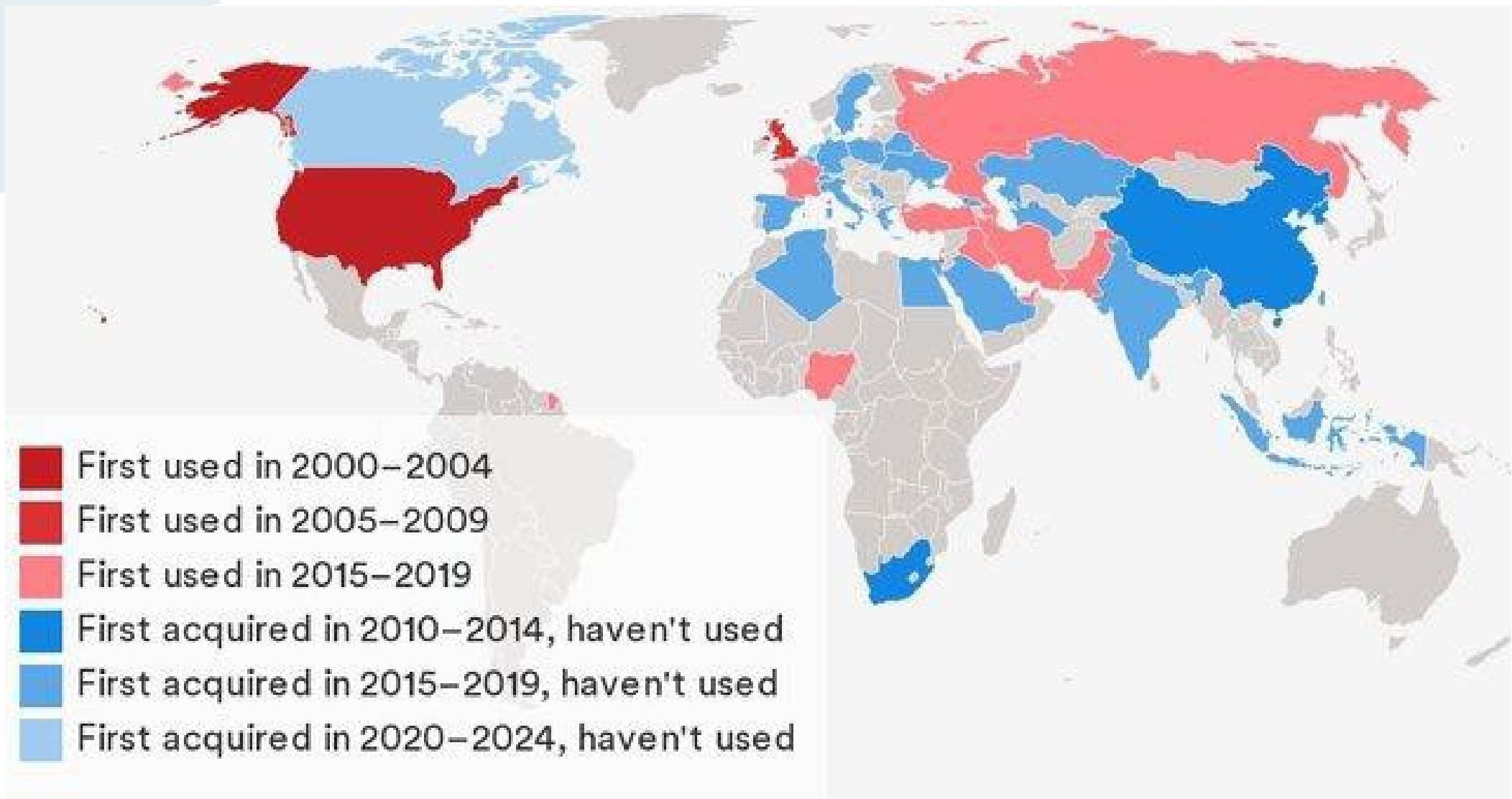
- Current development in computing Drivetrains, composites and sensors have been greatly improved and are much cheaper. It can be applied in military and civilian applications.
- According to the book "International Military and Civilian Unmanned Aerial Vehicle Survey" published in April 2011, the market for unmanned aerial vehicles or unmanned aerial vehicles (UAVs) has increased in demand.
- There are more than 610 unmanned aerial vehicles worldwide that are used in both civil and military affairs.
- There are more than 250 companies involved in the unmanned aviation sector. Therefore, it is very likely that the unmanned aircraft market will be worth more than US\$80 billion by 2020.

Development of UAV

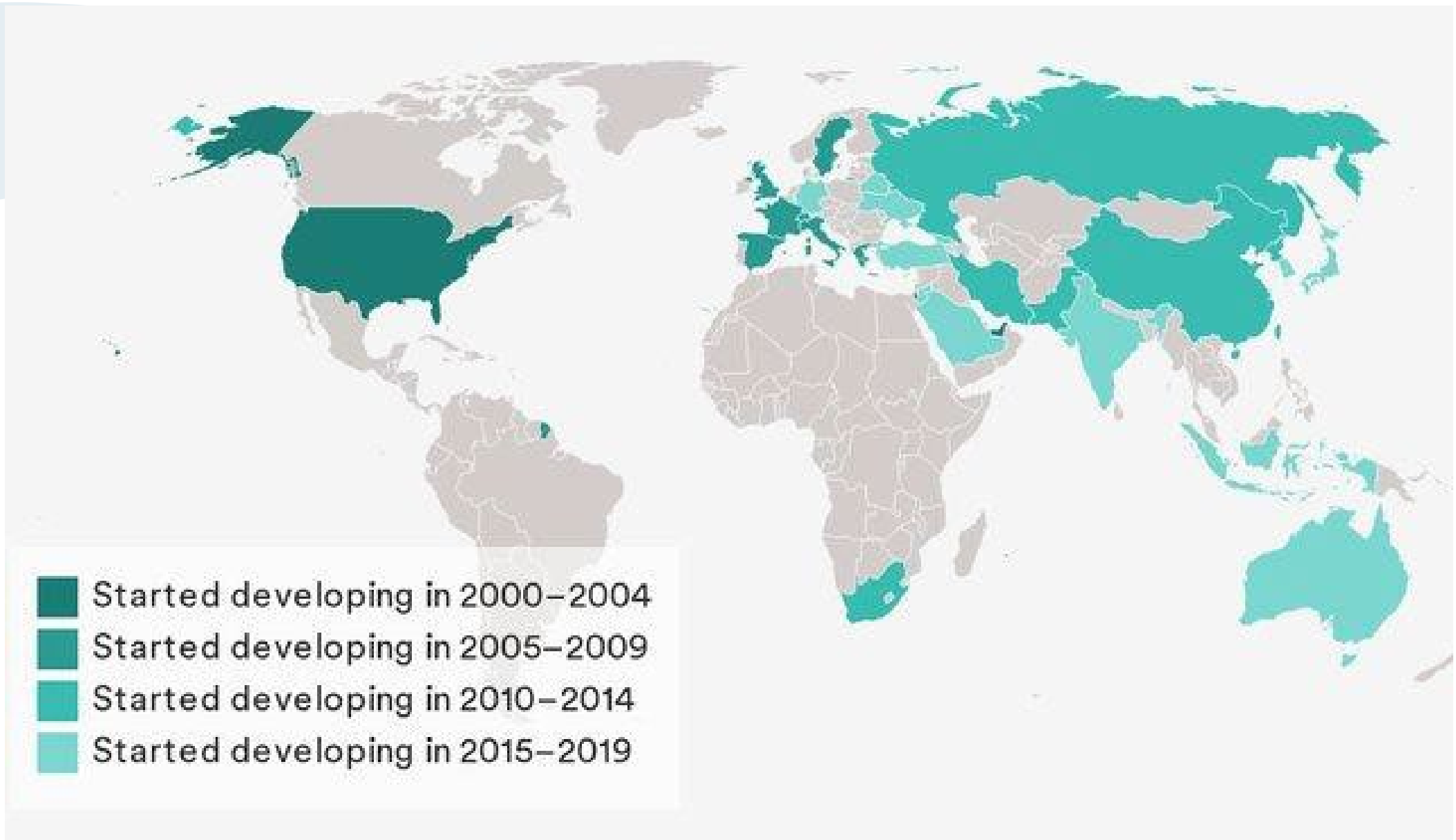
In conclusion, unmanned aerial vehicles were built in the early days for reconnaissance missions. And because unmanned aerial vehicles are characterized by the absence of risk of loss. It is a very simple system. Small in size, difficult to detect, highly agile, it has become an important tool in warfare. Can patrol Track and find goals



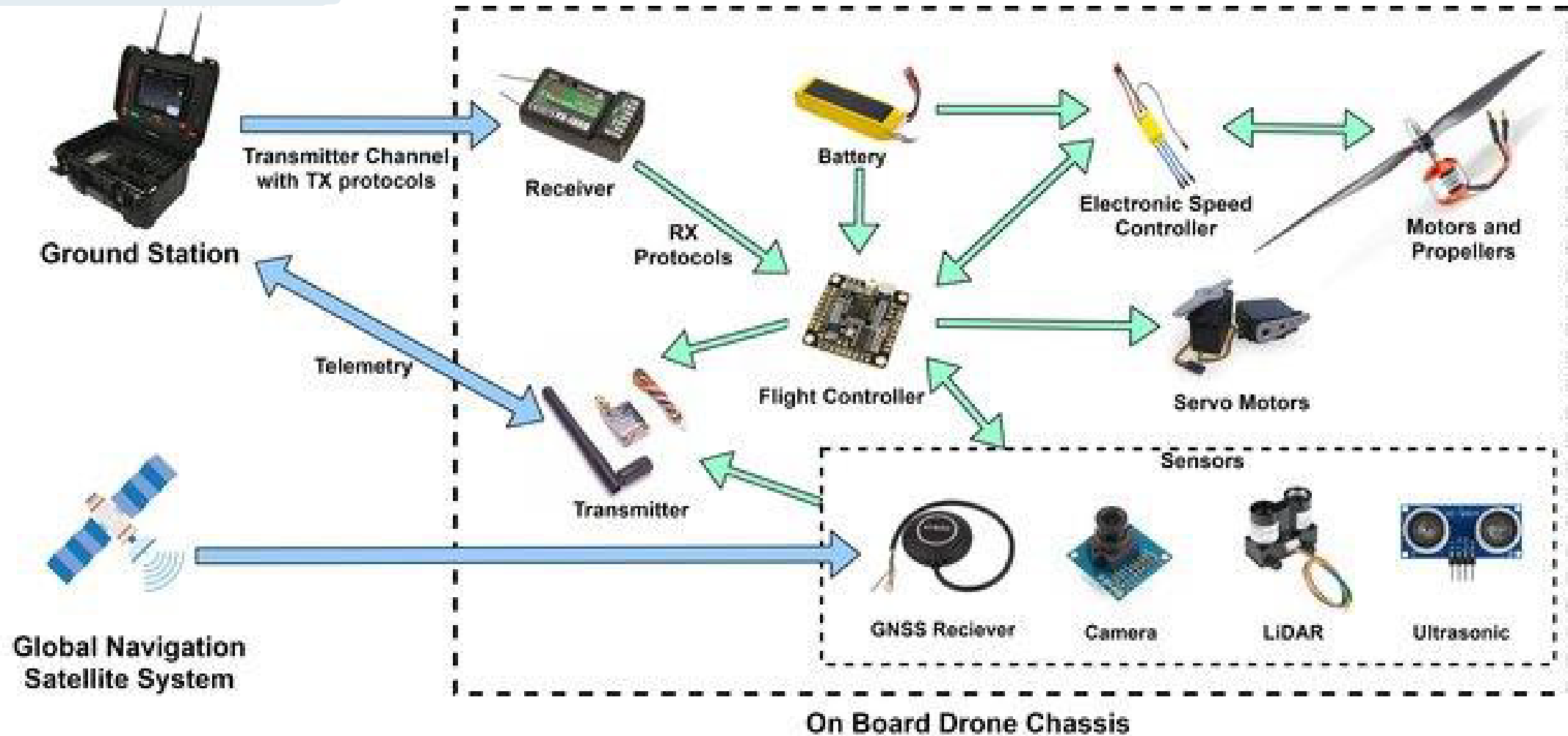
Countries that have acquired armed UAVs



Countries that have conducted UAV strikes



Countries that have developed armed UAVs.



UAV components and working.

Benefits of UAV

- It is used to take photos or videos from a bird's eye view.
- Wedding
- Important Events
- news







Benefits of UAV

- Security
- It is used to monitor, investigate and assist in the arrest of the accused.
- used in surveillance flights by police.





workpoint
LIVE 00:33:30

ข่าวเวิร์คพอยท์
workpointnews

ศักดิ์ ตรีสมบัติ แห่งสหรัฐฯ ประกาศขึ้นบัญชีเกาหลีเหนือ เป็นประเทศผู้สนับสนุนการก่อการร้ายอย่าง

Benefits of UAV

- Using drones as a means of transporting goods major companies have started piloting the use of drones for logistics : google and amazon this technology is being developed continuously.



Benefits of UAV

- **Agriculture**

Using drones to spray fertilizers and chemicals reduces the risk of direct exposure to chemicals of human beings, mainly humans who spray fertilizers and chemicals. will have a significant negative impact on humans, and it is also important to save a lot of time at work.



Benefits of UAV

- The use of drones for safety and security

In the latter, drones can be used effectively in conjunction with the search for survivors of serious events such as landslides or natural disasters. People can't get into the area, so they have to send drones in to find what they want. If you find it, analyze it and plan for further rescue.



Benefits of UAV

- **Resource Conservation**

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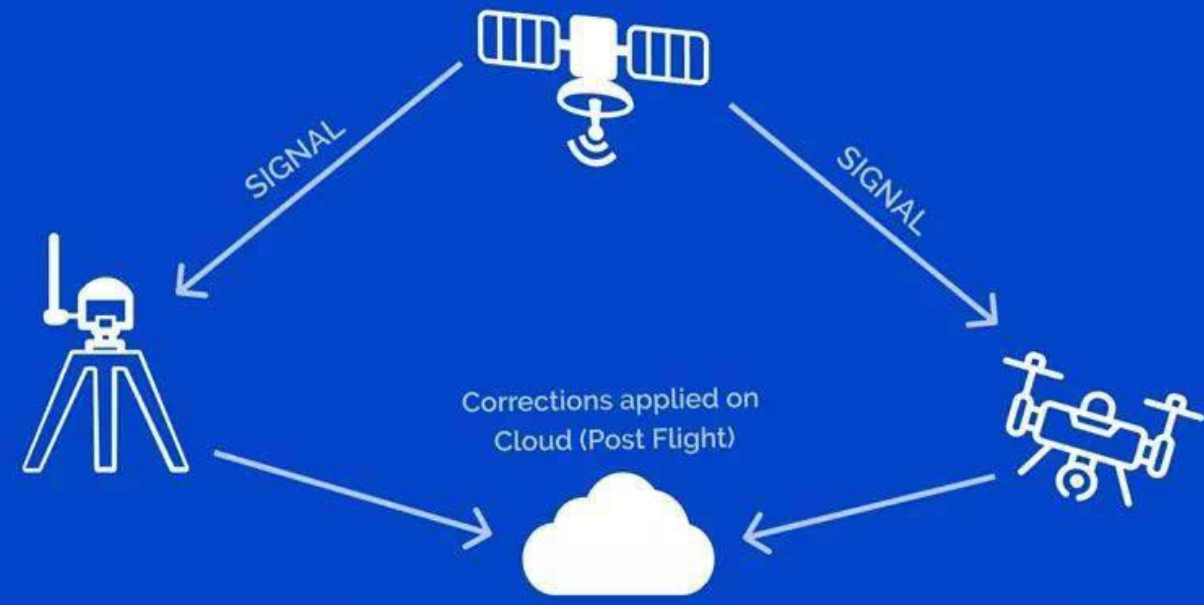


Benefits of UAV

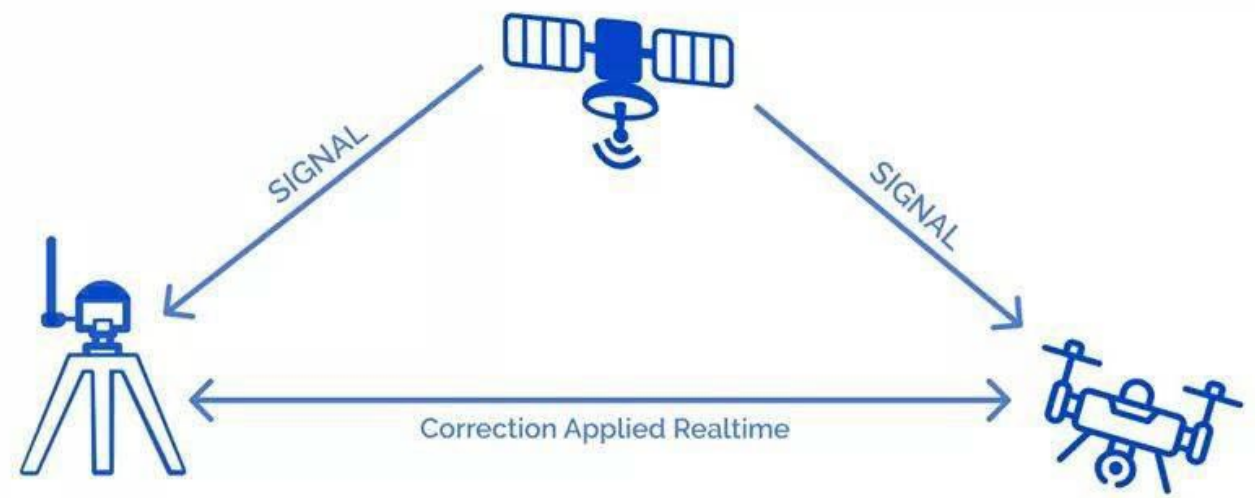
- Engineering Drones are used for topographic mapping for data collection or even design, and because the bird's-eye view obtained from the drone has a steep surface value. can be applied to 3D drawings. depth calculation. such as forecasting flooding. how much water will enter the area, as well as to be used in conjunction with the design of current building structures.







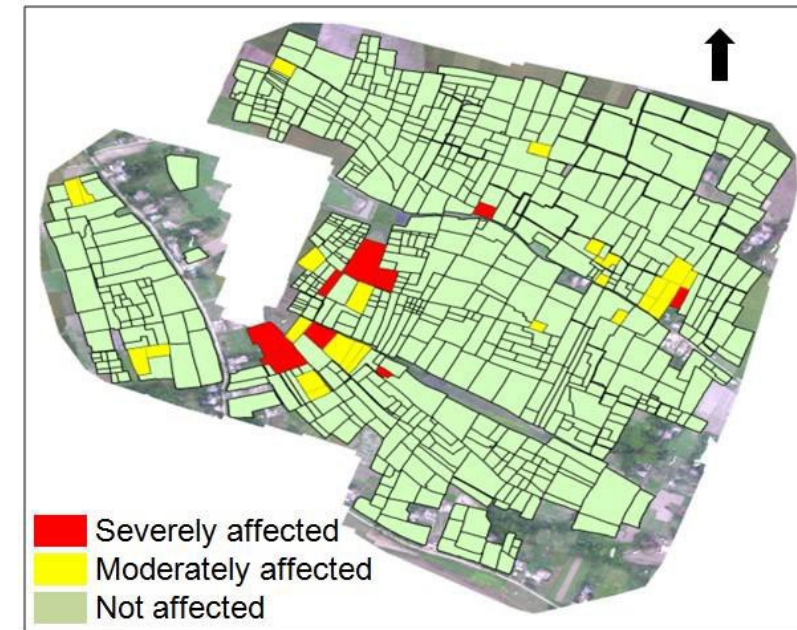
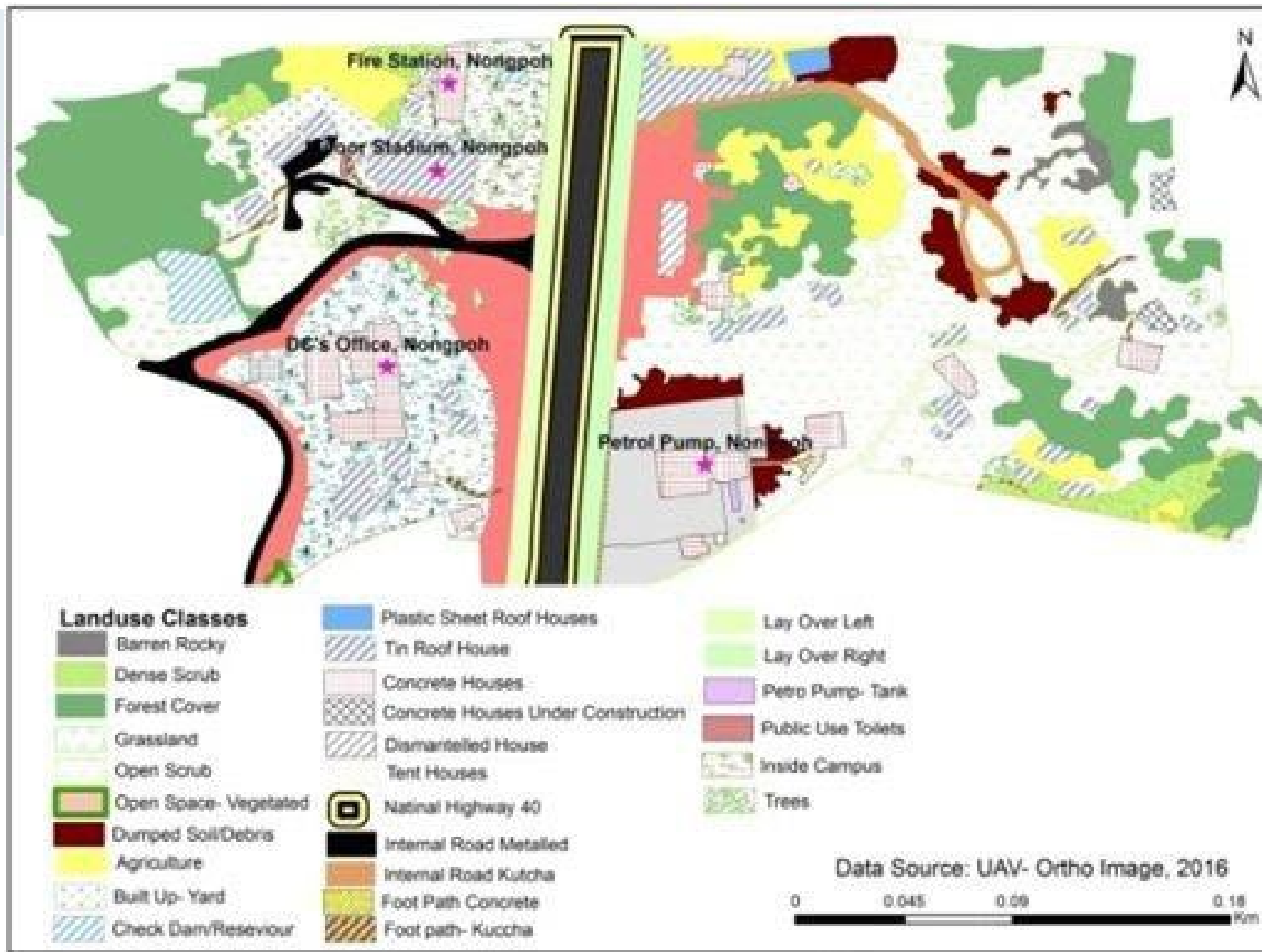
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VS
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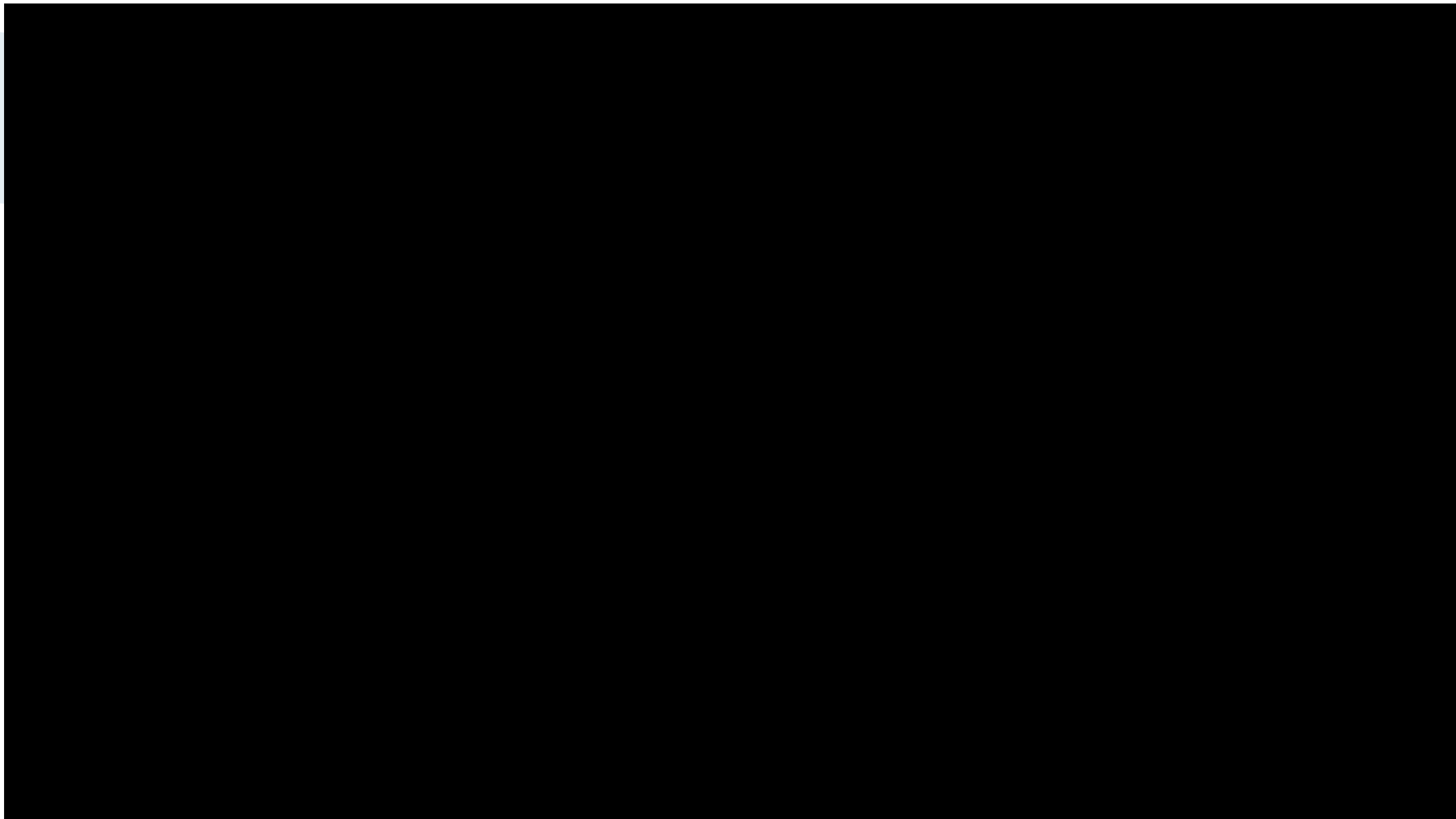
Benefits of UAV

- urban development through the use of modern technology to help with the introduction of UAV (Unmanned Aerial Vehicle) to explore and study topographic data for planning, solving problems and developing cities, whether they are current cities or cities planned to be rebuilt.



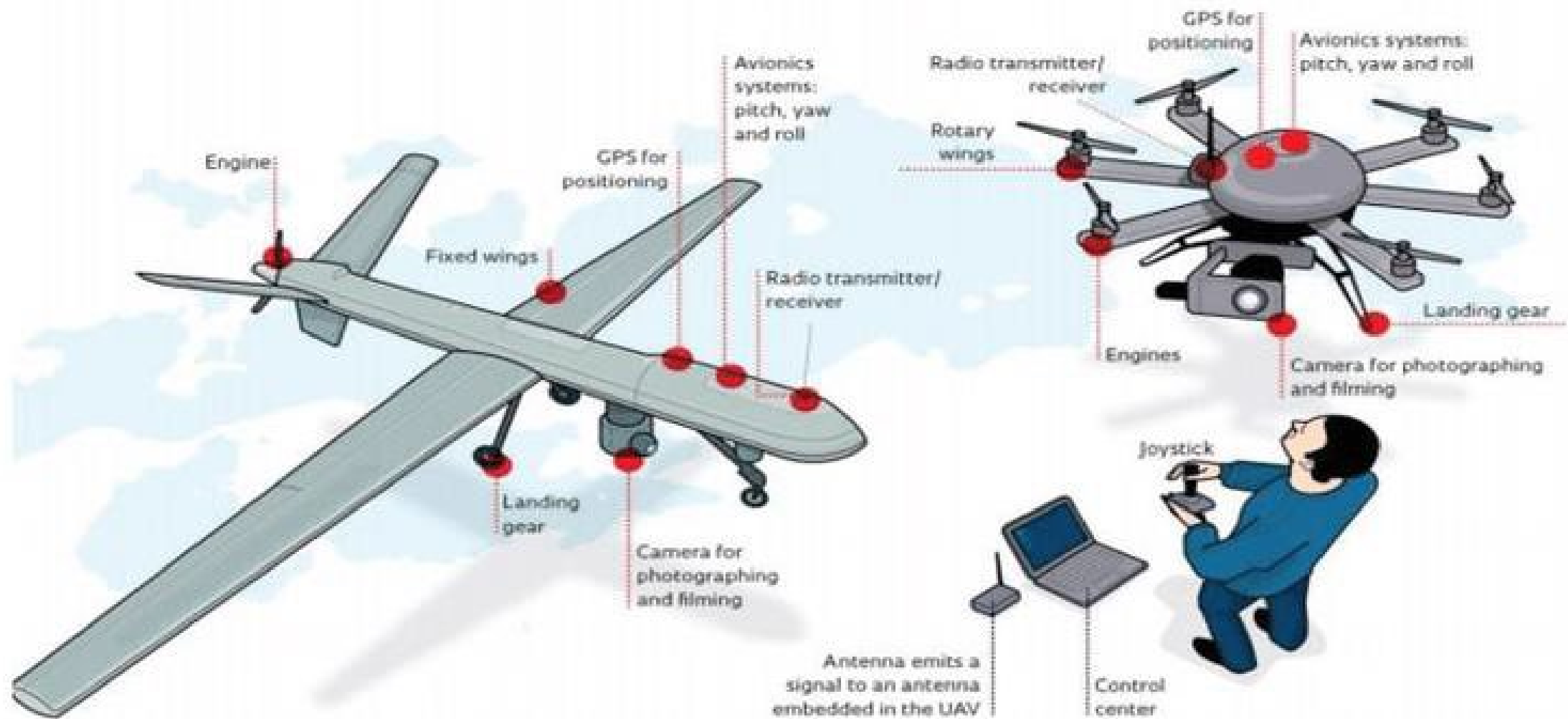








The composition of the UAV



Types of UAV

Multi Rotor Drones

- Take-off characteristics Vertical relies on the rotation of the propellers to go up and down and drive in different directions, with 3, 4, 6 and 8 propellers. Generally, the flight duration is about 10-30 minutes.
- There are many variations depending on the wings or propellers, such as 4, 6 and 8 propellers.
- The advantage is that it does not require a runway to fly - the disadvantage is that the flight speed is less than other drones, so it can fly slower.
- In 2017, this type of drone occupied a market share of up to 77%.

Types of UAV

dji phantom 4 flight time

Max Flight Time Approx. 28 minutes

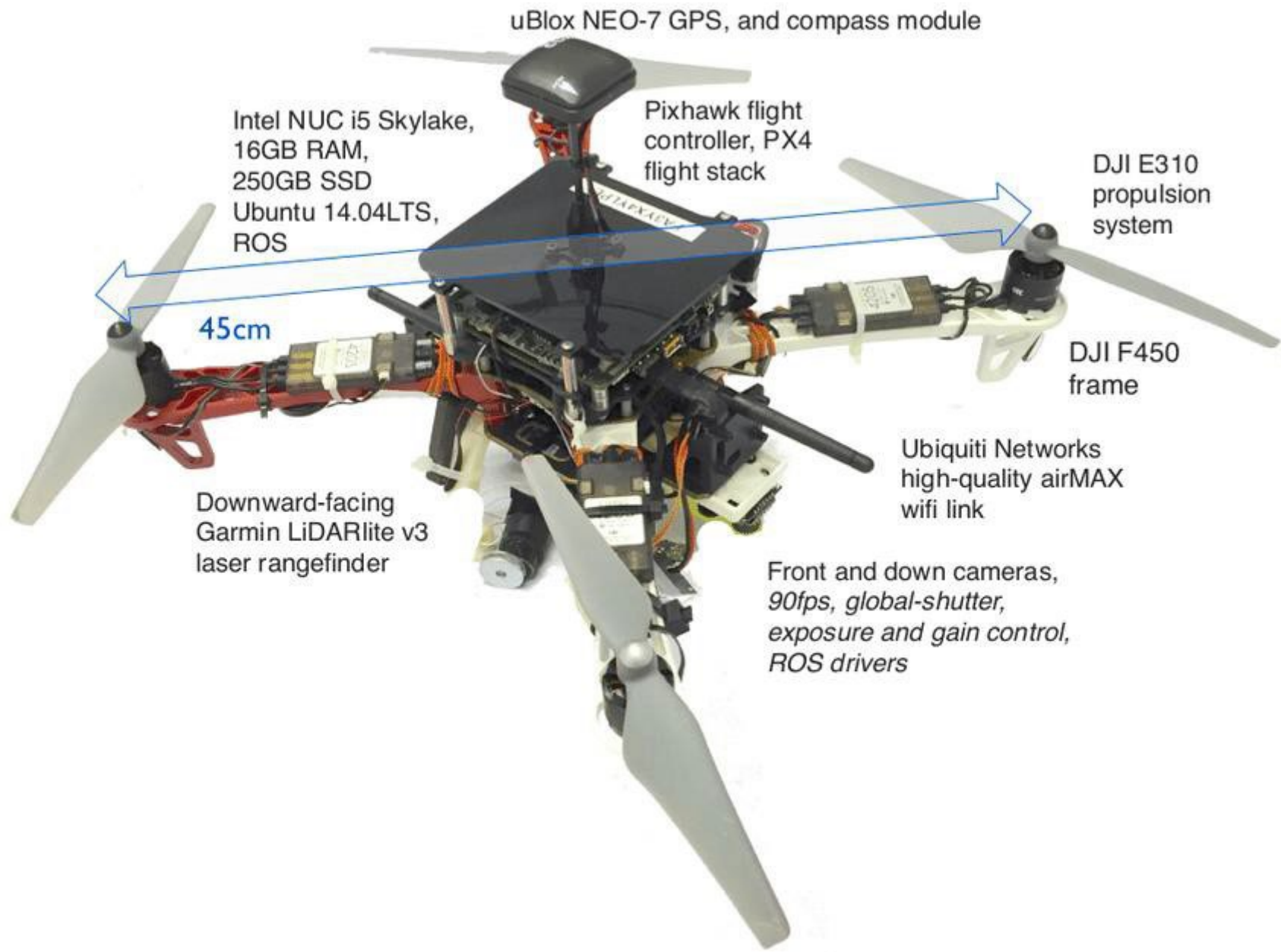
PHANTOM 4 PRO V2.0

1" 20 MP CMOS Sensor | 30-min Flight Time
Obstacle Sensing in Five Directions

Buy Now

Learn More >







Quad I



Quad X



Hex I



Hex V



Hex Y



Hex IV



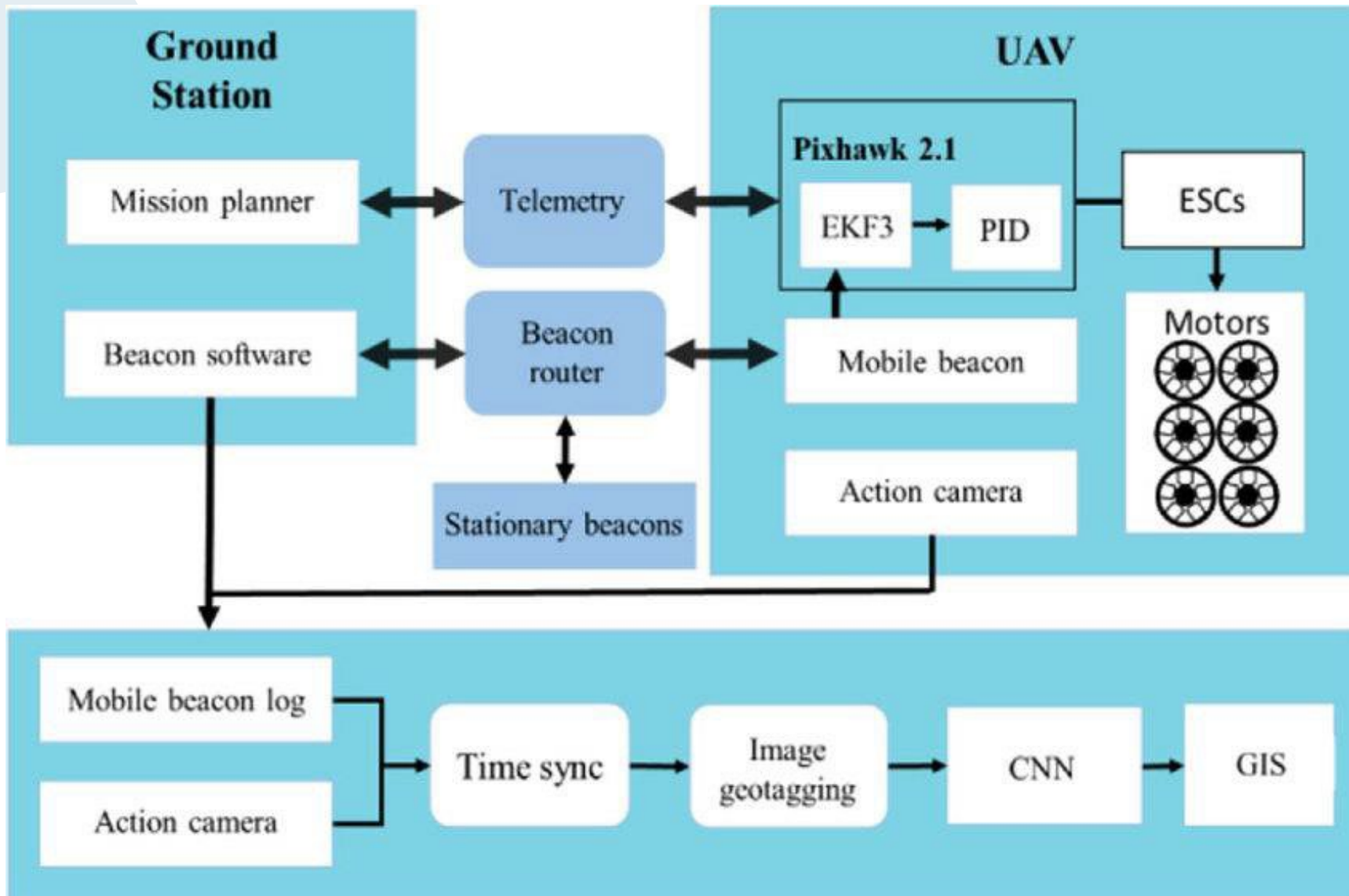
Oct X



Oct I



Oct V

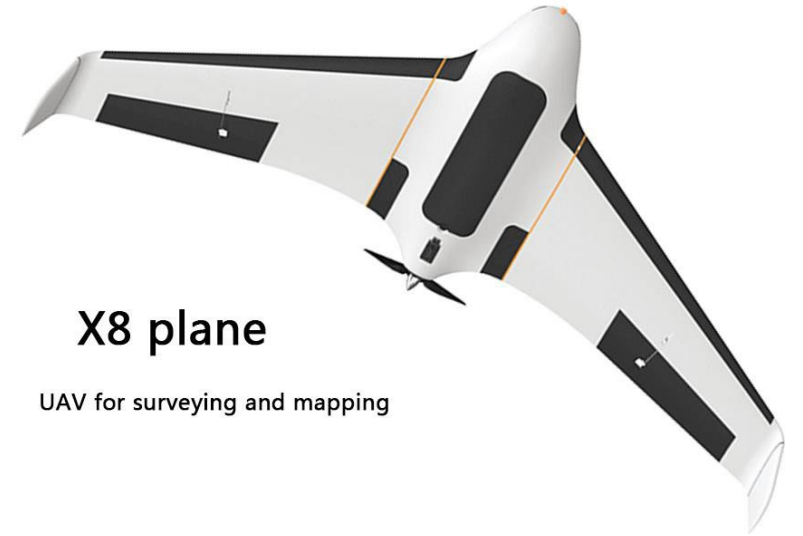




Types of UAV

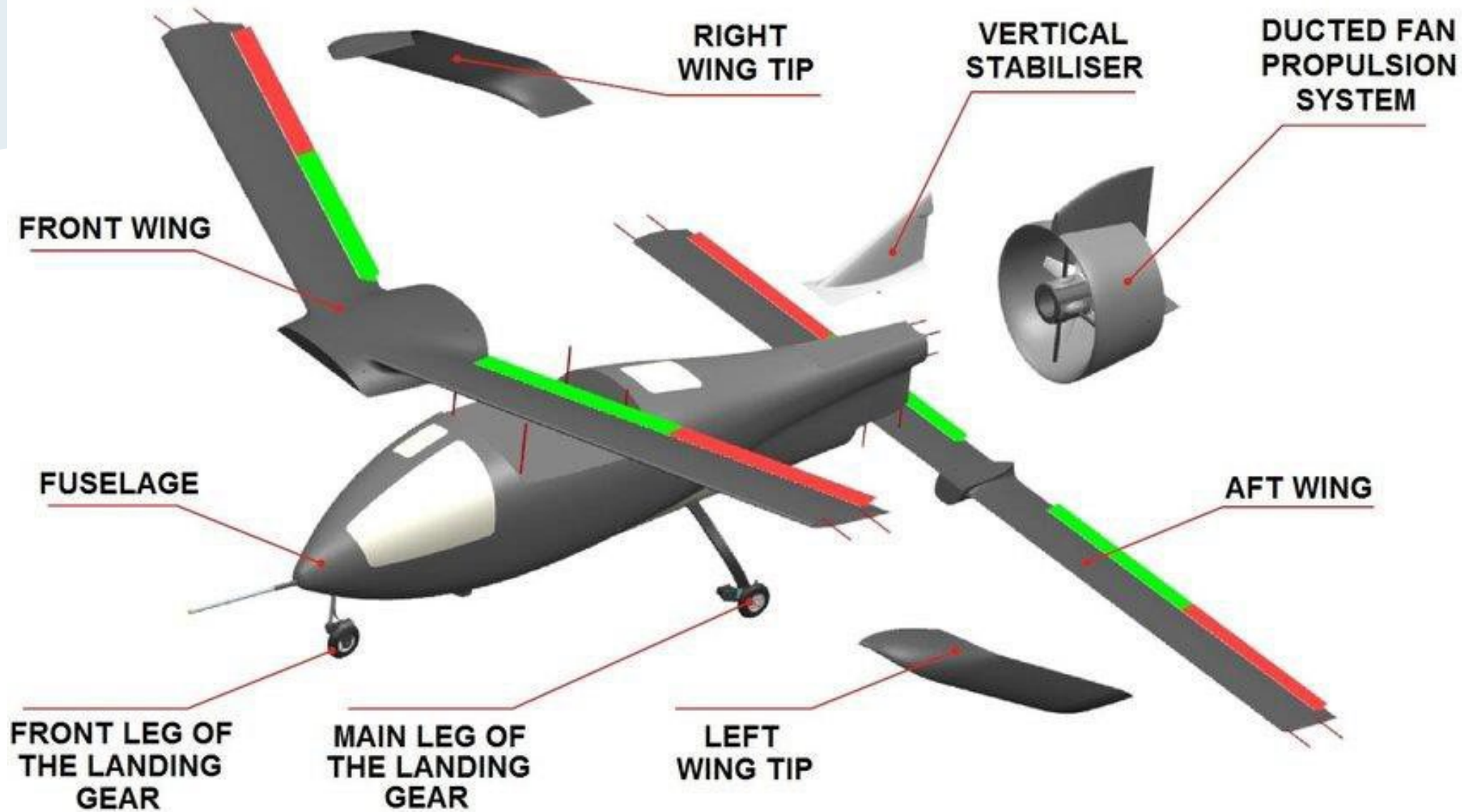
Fixed-wing drones

- It is similar in operation to an airplane and therefore requires a runway.
- This type of drone can fly longer and faster.
- Suitable for use in large areas.
- It can carry heavy loads over long distances and consumes little energy.



X8 plane

UAV for surveying and mapping



Types of UAV

Emission **Fixed-wing UAV** There are 3 variations

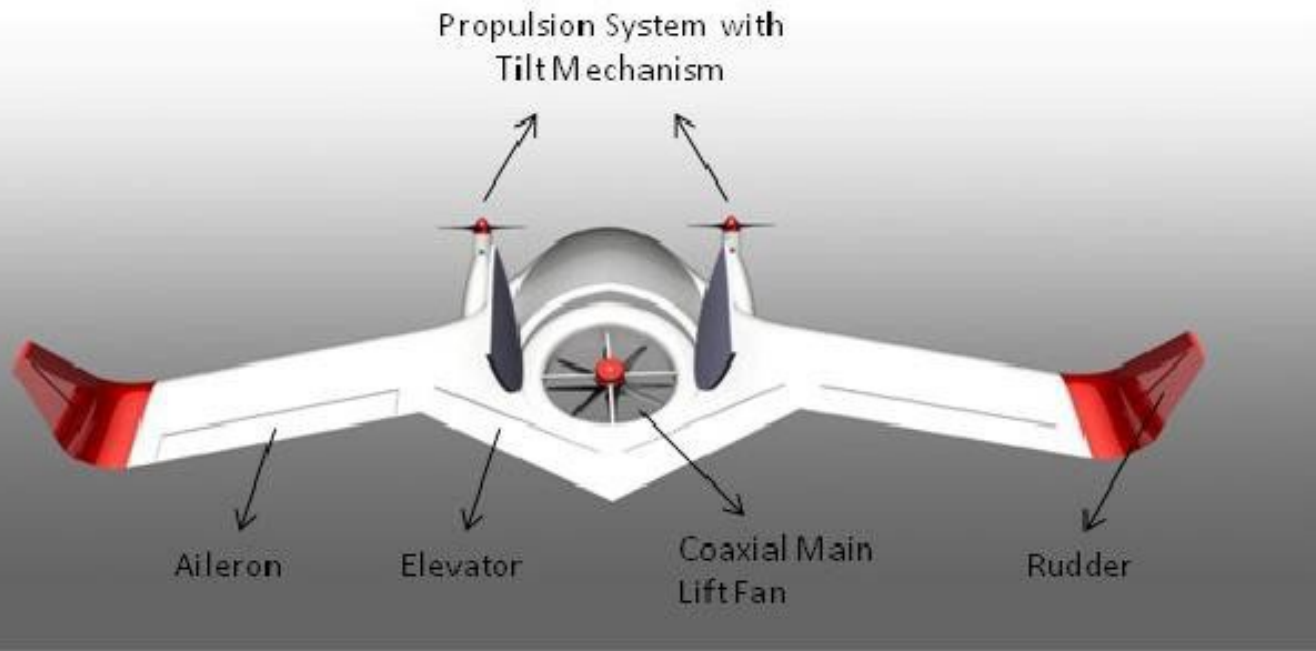
- Hand launch
- Launcher
- Run way

<https://www.youtube.com/watch?v=dqwThsmRyq4>

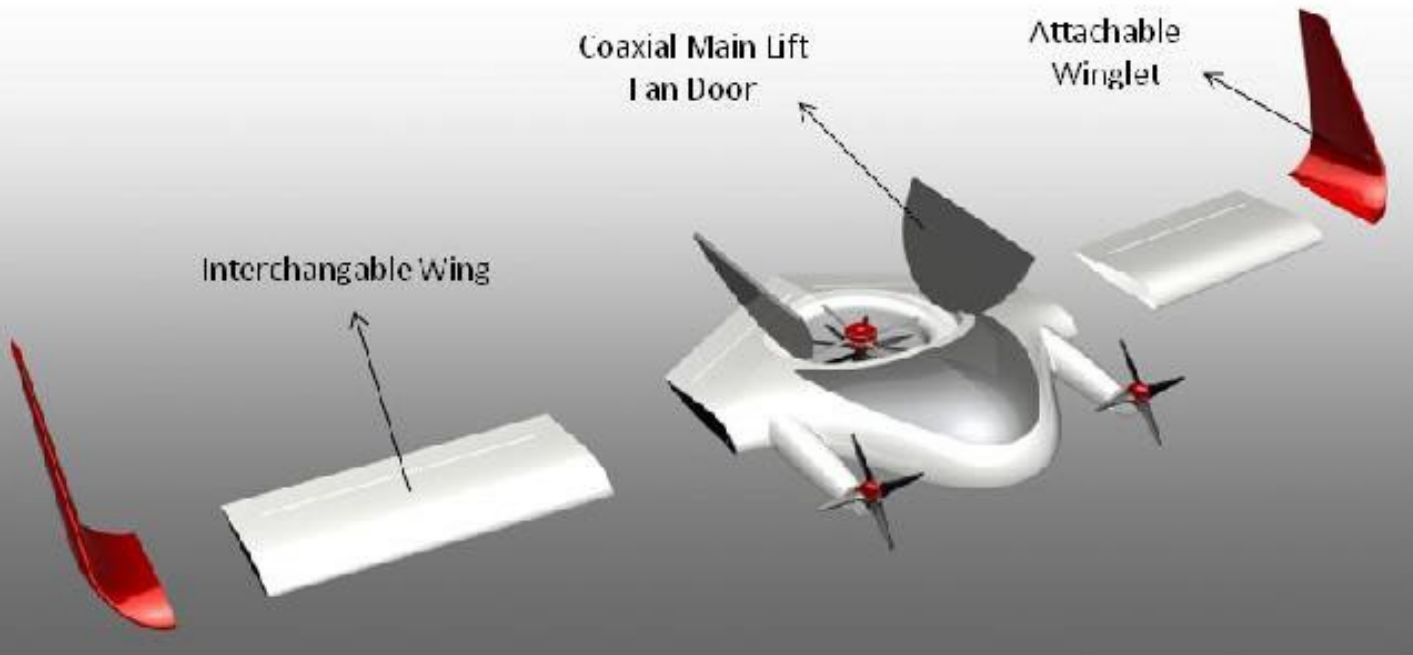




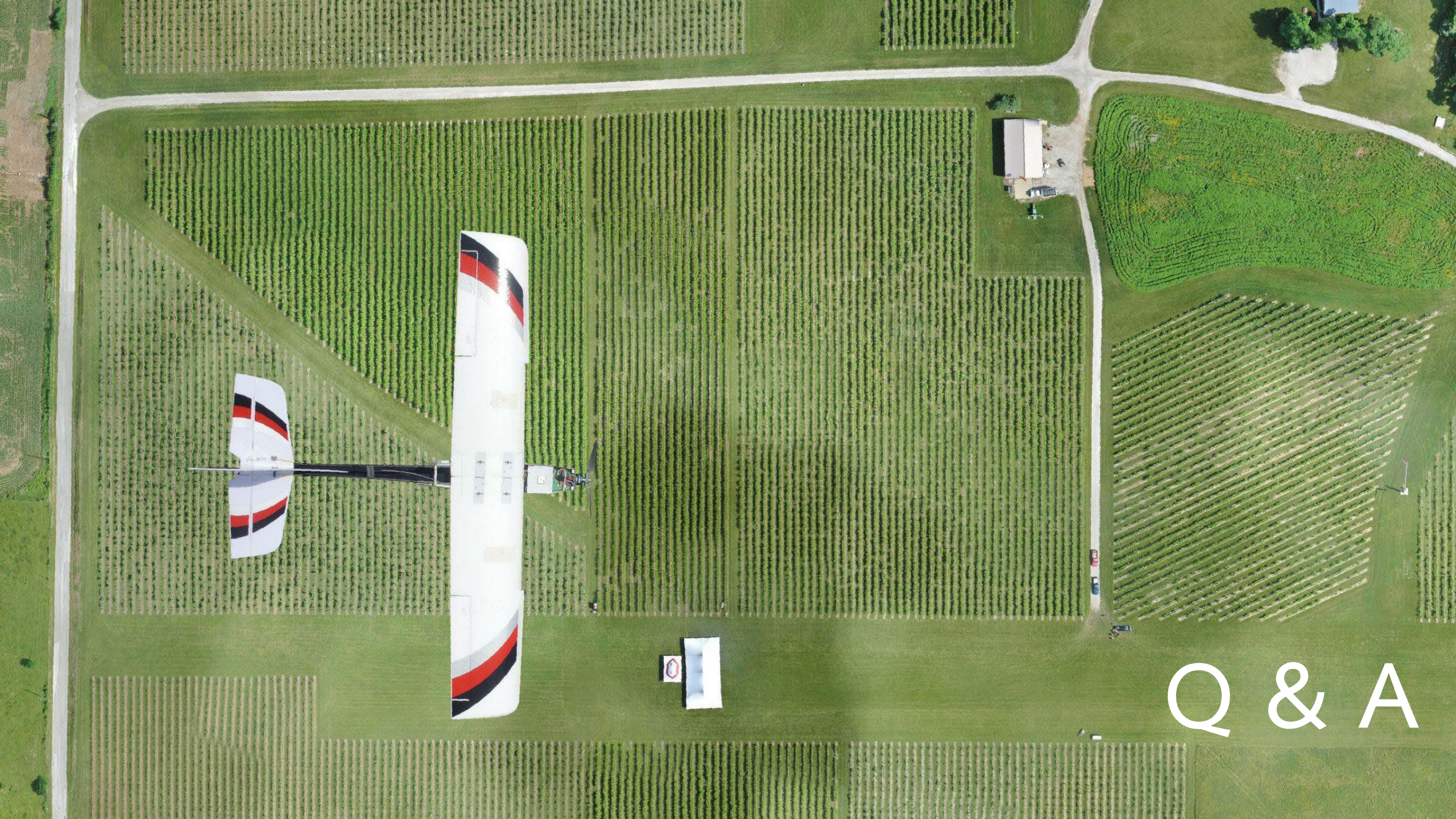
VTOL : Vertical take off and Landing



(a)







Q & A