

Guide to drone uses

Although they may not look it, drones are quickly becoming the spearhead for innovation in multiple sectors.

The commercial drone market has seen substantial growth, primarily due to increased adoption of its applications across various sectors, like Infrastructure, Oil and Gas, Agriculture, Mining, Media and Entertainment etc. As per Drone Industry Insights the drone market will grow from 22.5 billion USD in 2020 to 42.8 billion USD in 2025 at a CAGR (Compound Annual Growth Rate) of 13.8%.

Their unassuming appearance is part of what makes them so effective; they're small enough to get the job done without being costly and powerful enough to carry sophisticated cameras and equipment.

And with regulations beginning to catch up with use cases such as package delivery allowing for operations Beyond Visual Line of Sight (BVLoS), we are likely to see continued acceleration of use cases.

Here we break down the different ways' drones are being used.



INSPECTIONS

One of the most common functions drones are used for today are inspections. What these inspections entail varies across sectors but the speed with which drones can conduct them makes a significant difference to the cost and efficiency of the operation. And it's not only speed and cost that make it attractive, the video and data collected often allows for more detailed evaluation and identification of issues that can be fixed before becoming more costly to resolve.

Some examples include inspecting farm or infrastructure. In a farming example drones are often used with sensors to determine where crops may require more water or fertilizer while at the same time detecting any signs of infestation. As it relates to infrastructure (e.g. bridges, dams, pipelines, wind turbines) drones can be used to inspect for stress fractures, leaks, or early signs of wear.

In the US, power companies have been using drones to check powerlines to complete the job in less time, with less cost and less injuries and accidents.

Insurance companies in the USA were also some of the first to adopt drones, achieving permission from the FAA as early as 2015 to gather aerial data for catastrophe response, underwriting assessments and claims resolution.

SECURITY/SURVEILLANCE

Drones can also be applied in security and surveillance capacities. Militaries all over the world utilise drones in their operations given their efficiency, speed and size. They can be used for stealth missions to gather intel or to get into smaller areas other cameras can't reach.

Drones have also been used in sensitive situations by Government agencies and Military operations both domestically and internationally. In June 2020, the [New York Times](#) reported "The Department of Homeland Security deployed helicopters, airplanes and drones over 15 cities where demonstrators gathered" for Black Lives Matter protests.

In more commercial uses we find drones being used to monitor schools, event venues, and more recently determining if social distancing guidelines are being followed.

AGRICULTURE

The ways drones can be used in agriculture are almost endless, with innovation and adoption in this space continuing to grow. Just a few of the key uses for drones in this sector include spraying fertiliser (which is both more efficient and cost effective than other methods), land surveying, crop monitoring to prevent losses and animal tracking to check herd size and health.

Agricultural drones are increasingly using more sophisticated payloads and cameras including;

- Multispectral sensors to identify nutrient deficiencies, pest damage, fertilizer needs and water quality.
- Hyperspectral sensors to analyse plant nutrients, plant diseases, water quality, and mineral and surface chemical composition.
- Lidar laser sensing to create 3D models
- Thermal sensing to track the surface temperature of land and plants

Currently there are several fee-per-service companies who specialise in agricultural drone mapping and services, but with the increasing automation of drone flight technology, agricultural uses at a farm level is expected to increase.

FOOTAGE OR IMAGE CAPTURING

The use of drones to capture images or footage has also increased in popularity across a variety of industries.

Real estate agents are increasingly taking advantage of drone technology to take aerial footage of houses to include in listings and showcase their external features.

Photographers are also using drones to capture aerial perspectives and Architects have also been able to use drone images to create 3D renderings of their projects as they have up to date aerial shots of the area they intend to build the project on and can better understand how it will fit into the existing surroundings.

The media are increasingly deploying drones to capture footage that would otherwise be difficult or dangerous for a traditional cameraman to capture.

NEW COVID-19 APPLICATIONS

Following COVID-19 restrictions, drone technology has also been used to help monitor crowd sizes and social distancing measures, through capturing live footage and sending it through for police to observe and potentially pass onto the state control centre.

The FAA fast tracked applications which complied with its rulings and authorisations to allow operators to transport goods and certain medical supplies via drones –including test kits, most prescription drugs and, under certain circumstances, blood. The FAA also issued special approvals, some in less than an hour, for flights that support emergency activities and appropriate government, health, or community initiatives.

In addition to this, the University of South Australia is working with Draganfly, a Canadian drone manufacturer, to develop a 'pandemic drone'. This drone can monitor heart rate, sneezing, coughing and even body temperature through the use of artificial intelligence and thermal cameras. Although the drone is still as estimated six months from completion, there are concerns around public privacy and the way this surveillance could be taken advantage of.

Further Reading

<https://www.businessinsider.com/drone-technology-uses-applications>

<https://emerj.com/ai-sector-overviews/industrial-uses-of-drones-applications/>

<https://www.mydronelab.com/blog/commercial-use-of-drones.html>

<https://www.unisa.edu.au/unisanews/2020/autumn/story11/>