

UNMANNED AERIAL VEHICLES AND SYSTEMS

Unmanned systems are an emerging technology that can offer commercial and operational advantage to organisations.

Unmanned Aerial Vehicle (UAV)

- Refers to the hardware, the plane itself.
- UAVs have been used for some time in the military and are popular for a diverse range of non-survey related applications such as film-making, environmental work and even recreational use.

Unmanned Aerial System (UAS)

- Refers to the complete solution, including the camera(s), route planning software, GPS and so on.
- A UAS is designed around the application it is intended for, for example solutions can be engineered specifically for surveying pipelines, road corridors, mine sites and topographic surveying.

Uses:

- Aerial surveillance
- Military operations
- Search and rescue
- Geophysical surveys
- Law enforcement
 - E.g. over-watch of vehicle checkpoint and search, situational awareness during hostage situations, traffic monitoring, assistance in vehicle apprehension, crowd monitoring and control (with loudspeakers), disaster response and management, wide area detection of drug making facilities, drug crop detection, distribution of video to ground patrols and HQ facilities simultaneously.
- Environmental monitoring
 - E.g. monitor pollution in urban, rural and remote areas for scientific and industrial monitoring purposes.
- Emergency and disaster relief
 - Immediate overhead imagery showing the impact of the disaster (by day or night) is critical in being able to inform the first responders and the international community, to assist in the correct aid arriving as soon as possible.
- Border security
- Critical infrastructure monitoring and protection
 - Often the location of the oil and gas infrastructure is in remote areas, as such the use of unmanned systems is an ideal and cost effective solution to enhance security. Port security is also vital to ensure that shipping remains free of stoppages and security related incidents.

Unmanned aircraft activities are approved for operations over unpopulated areas up to 400ft AGL (above ground level), or higher with special approvals. Special approvals are also required for other areas.

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Operations are not permitted in controlled airspace without CASA approval and coordination with Airservices Australia.

Benefits:

- A UAS has the ability to complete a flight despite dense cloud cover, wind and even rain. As manned aircraft are required to fly higher, they are often cancelled due to inclement weather, whereas a UAS will still be able to fly.
- UAS aerial mapping can achieve significant cost savings over traditional survey methods and manned flyovers. Users are able to survey large areas with a one-man survey crew and avoid costly time delays associated with manned flyovers.

Training and Qualifications:

- An Unmanned Aircraft Vehicle (UAV) controller's certification and an operator's certificate to fly is required for UAS.
- Australia's Civil Aviation Safety Authority (CASA) requires the chief controller of a UAV system to have passed the theory, but not the practical, component of a private Pilot Licence.

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