

Drones

Unmanned aerial vehicle



is an aircraft without a human pilot on board and a type of unmanned vehicle

Common stakeholders

- Drone Owner: who operates the drone and receives the video shot by the drone's camera; not just flying the drone
- Members of the public who are observed/filmed by the drone's camera or directly affected by the drone.
- Government departments who are responsible for regulating the use of drones and setting rules for their use
- Third parties who may intercept the video or take control of the drone
- Companies responsible for developing the drone hardware/software and who have a responsibility to ensure its security and reliability.
- Third party put at risk by the reliability of the WIFI signal/ GPS signal, *etc*, and the drone crashes and does damage



Strand 1: Social and ethical significance

- Reliability and Integrity
- Security
- Privacy and anonymity
- Intellectual property
- Authenticity
- The digital Divide and Equality of access
- Surveillance
- Globalisation and Cultural diversity
- Policies
- Strands and Protocols
- People and machines
- Digital citizenship

Strand 2: Application to specific areas

- **Business and employment:** Commercial enterprises such as filmmakers, retailers or construction companies who use the drones themselves or data/video gathered (3D imaging) by drones for business activities and delivery services.
- **Education and training:** hand eye coordination and children in higher grades can learn about Maths, Physics and Science with the aid of drones
- **Environment:** forecasting natural events
- **Health:** Drones can provide just-in-time resupplies of key medical items, regardless of location
- **Home and leisure:** fun
- **Politics and government:** Fire service, Police: crime fighting and intelligence gathering. Illegally using the drone – eg terrorism, criminal activity (transport of guns, drugs, etc), illegal surveillance.

Strand 3: IT Systems

Step by step

- An app is installed on the drone operator's GPS-enabled phone
- GPS-enabled smartphone connects to the drone using WiFi
- WiFi connection is made by specifying the drone's unique SSID in the smartphone app
- Drone pinpoints its position using GPS satellites to trilateral (accept triangulate) their position
- User can control the drone using onscreen controls provided by the smartphone app. user can control the drone using a handset or controller connected to the phone (or a specialized handset/joystick by itself)
- Smartphone displays the position of both the user and the drone on a map streamed from the internet or downloaded to the device
- Drone can be controlled by sending GPS coordinates from the smartphone to the drone, the drone calculates a flightpath from its current location to the location specified by the coordinates and flies to that point
- Drone streams video back to the smartphone

Strand 3: IT Systems

- user can instruct the drone to hover at a certain point and capture video footage
- The drone can have a “return to home” setting added, where it returns to a point if the WiFi connection is lost (this can happen if the drone is used beyond the normal range or in a different city)
- Drone has a GPS receiver enabled automatically
- user can choose the speed and height of the drone using controls on smartphone
- encryption of video stream and control instructions
- video is recorded and stored in camera/smartphone and may be in cloud
- drone may require authentication, such as a 4-8 digit number, to be operated

Advantages

- Doesn't require a qualified pilot
- Can enter any environment
- Can stay in the air for up to 30 hours
- Can be programmed to complete the mission autonomously

Disadvantages

- Costly compared to manned vehicles
- More hardware complexities
- Limited abilities
- Training is required

Resources

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Thank you