

Overview of Remotely Piloted Aircraft Systems

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Background

- Recreational use of small drones by non aviators is one of the most significant hazards to manned aviation
- Manned aircraft
 - Aircraft intended to be flown with a pilot on board
- Unmanned aircraft
 - Aircraft intended to be flown without a pilot on board

Background cont'd

- Unmanned aircraft
 - Model aircraft,
 - unmanned free balloons,
 - Remotely Piloted Aircraft
 - Drones

Remotely Piloted Aircraft Systems (RPAS)

- Remotely Piloted Aircraft Systems (RPAS)
 - An unmanned aircraft which is piloted from a remote pilot station
 - Characteristics
 - Capable to be integrated in ATM system together with manned aircraft
 - Real time piloting control provided
 - Requires licensed remote pilot
 - May be certificated or non-certificated (application of regulatory framework)

Uses of RPAS

- Policing
- Firefighting
- Aerial photography
- Aerial survey
- Powerline inspection
- Aerial spraying
- Search and rescue
- Cargo delivery
- etc

Categorization of RPAS

- Criteria for categorization of RPAS may be based on;
 - Maximum take-off mass (MTOM)
 - Kinetic energy
 - Various performance criteria
 - Type/area of operations
 - Capabilities
 - Programmed
 - Pre-programmed
 - Use
 - Toys
 - etc

RPAS components

- RPAS consist of the following;
 - Remotely piloted aircraft
 - Remote pilot station(s)
 - C2 Link
 - Other components as specified in the type design
 - ATC communication and surveillance equipment
 - Navigation equipment
 - Launch and recover equipment
 - System health monitoring equipment
 - Flight termination system

RPAS components cont'd



RPAS images



RPAS images



RPAS images



RPAS images



Drones

- For recreational or commercial/professional purposes
- Most popular category of unmanned aircraft
- Usually flown visual line-of-sight (VLOS) in VMC
- May require special authorisation and coordination from the competent authority to operate in vicinity of aerodrome
- Mainly operated by people without aviation background

Drones cont'd



Drones cont'd

- Generally operated under the following conditions;
 - 120 metres/400 feet daytime VMC
 - 30 metres from people
 - 5.5 km from an aerodrome
 - Outside controlled airspace
 - Generally less than 25Kgs

Article 8 - Convention on International Civil Aviation

- No aircraft capable of being flown without a pilot over the territory of a contracting State without special authorisation by that State and in accordance with the terms of such authorisation
- Each contracting State undertakes to insure that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled as to obviate danger to civil aircraft.

Legal framework

- All unmanned aircraft whether remotely piloted or not are subject to the provisions of Article 8 of the Convention on International Civil Aviation
 - Unmanned aircraft require special authorisation to fly over another contracting state
 - Unmanned aircraft must be controlled to prevent danger to civil aircraft

Legal framework cont'd

- Standards and recommended practices (SARPs) relating to RPAS provided for in;
 - Annex 2 – Rules of the Air
 - Certifications and Authorizations
 - Annex 7 – Aircraft Nationality and Registration Marks
 - Annex 13 – Aircraft Accident and Incident Investigation
 - Definition of Accident
- Incorporated in the appropriate Uganda Civil Aviation Regulations
 - Draft RPAS Regulations

Thank you