Agenda Item 13

Open Forum
UAV WG Report

FAI Classification

- **3 Classes** covering aircraft which does not carry a human being **:**
  - **Class F-** Model Aircraft ⇨ ***CIAM***
  - **Class S** - Space Model ⇨ ***CIAM***
  - **Class U** - Unmanned Aerial Vehicle (UAV) ⇨ ***CASI*** *(Air Sport General Commission)*
- **Class F**: ***aircraft*** of limited dimensions, with or without a propulsion device, not able to carry a human being and to be used ***for competition, sport or recreational purposes***
- **Class U**: ***aerodyne*** with means of propulsion that does not carry a human, and which is designed ***for scientific research, commercial, governmental or military purposes***
- **Class S**: **spacecraft** or **aerospacecraft** of limited dimensions and limited payload-carrying capability unable to carry a human being or commercial payloads) ⇨ *Class S is not affected by UAV considerations*

General considerations

- **Impact of technology on the actual FAI Model Aircraft Classes**
  - Actual FAI model aircraft classes are defined for competition purposes only
  - Use of electronic devices offers possibility of increased performances

    ⇨ *Each CIAM Sub-Committee must define if such devices can (or cannot) be used and the appropriate requirements and limitations*
- **New types of aircraft with possibility of different events** (recreational or competition)
  - CIAM must take attention on new activities possible with current available technology (FPV, circuit with GPS guidance, ...)
  - CIAM must show its interest for new types of model aircraft such as multi-rotor (multi-copter)

UAV WG recommendations *(1/3)*

- **Recommendation 1:** Consider as aeromodelling all sportive and recreational activities done with all types of aircraft of limited dimensions not able to carry a human being

- **Recommendation 2:** Use the terms UAV (and UAS or UA), RPA/RPAS only for professional activities (scientific research, commercial, governmental or military purposes)

  Note: *Class F (Model Aircraft) and class U (UAV) must stay clearly differentiated. Class U does not concern CIAM. Regarding sport purpose, this class is only concerned by record attempts.*

Useful definitions *(1/2)*

- **General definitions**
  - **Drone model aircraft:** model aircraft equipped with on-board electronic devices (gyro sensors, altimeter, telemetry, GPS, video camera, ...) or associated flight systems (flight stabilisation, automatic flight control,...)

    Note: *Drone model aircraft can be rotorcraft or fixed wing*
  - **Multi-rotor** (or multi-copter)**:** rotary wing drone with more than two rotors

- **Visual line of sight** (VLOS)**:** the flight operator who assumes directly the control of the model aircraft **must maintain direct unaided visual contact with the model aircraft**

  Note: *VSOL must be assumed by a* ***main operator*** *in situation at any moment of the flight to take the direct control or to inform immediately the flight operator of any danger. FPV flight requires a "safety operator" (other than the FPV flyer).*

Useful definitions *(2/2)*

- **Other definitions**
  - **First Person View** (FPV)**:** video view of the model aircraft's camera transmitted to a pilot headset goggle or to a screen on ground

Note: *It is strongly recommended that the system is configured to initiate a failsafe procedure cutting off motors when losing the radio link*

  - **Self-guided drone:** drone equipped with a programmable autopilot system which can automatically stabilize the drone and/or initiate a programmed flight path

Note: *Such a drone is mission orientated and computer controlled nearly its entire flight, but it must be possible for the flight operator to desactivate at any moment the autopilot. It is strongly recommended that the system includes a "Return To Home" (RTH) function so that the drone may automatically return to a selected location in case of lost of the radio link*

  - **Flight operator:** the pilot who flies the drone and takes flight decisions based on received information; a helper that can feed information from a video link can be allowed

UAV WG recommendations *(2/3)*

- **Recommendation 3:** Modify as follows definition of a Model Aircraft in Volume ABR (Section 4C Part 1)

a) A model aircraft is an aircraft of limited dimensions, with or without a propulsion device, not able to carry a human being and to be used for competition, sport or recreational purposes.

b) For the whole flight, a radio-controlled model aircraft ~~*shall be in the direct control of the flier, via a transmitter, and in the flier's sight other than for momentary periods*~~ **must be within visual line of sight (VLOS) of the flier who assumes directly its control or who is in a situation to take the direct control at any moment, including if the model is being flown automatically to a selected location.**

c) For control line model aircraft, the flier must physically hold the control line handle and control the model aircraft himself.

d) Free flight model aircraft must be launched by the flier**,** and must not be **equipped with any device that allows it to be flown automatically to a selected location or** controlled remotely during the flight other than to stop the motor and/or to terminate the flight.

UAV WG recommendations *(3/3)*

- **Recommendation 3** *(end)*:

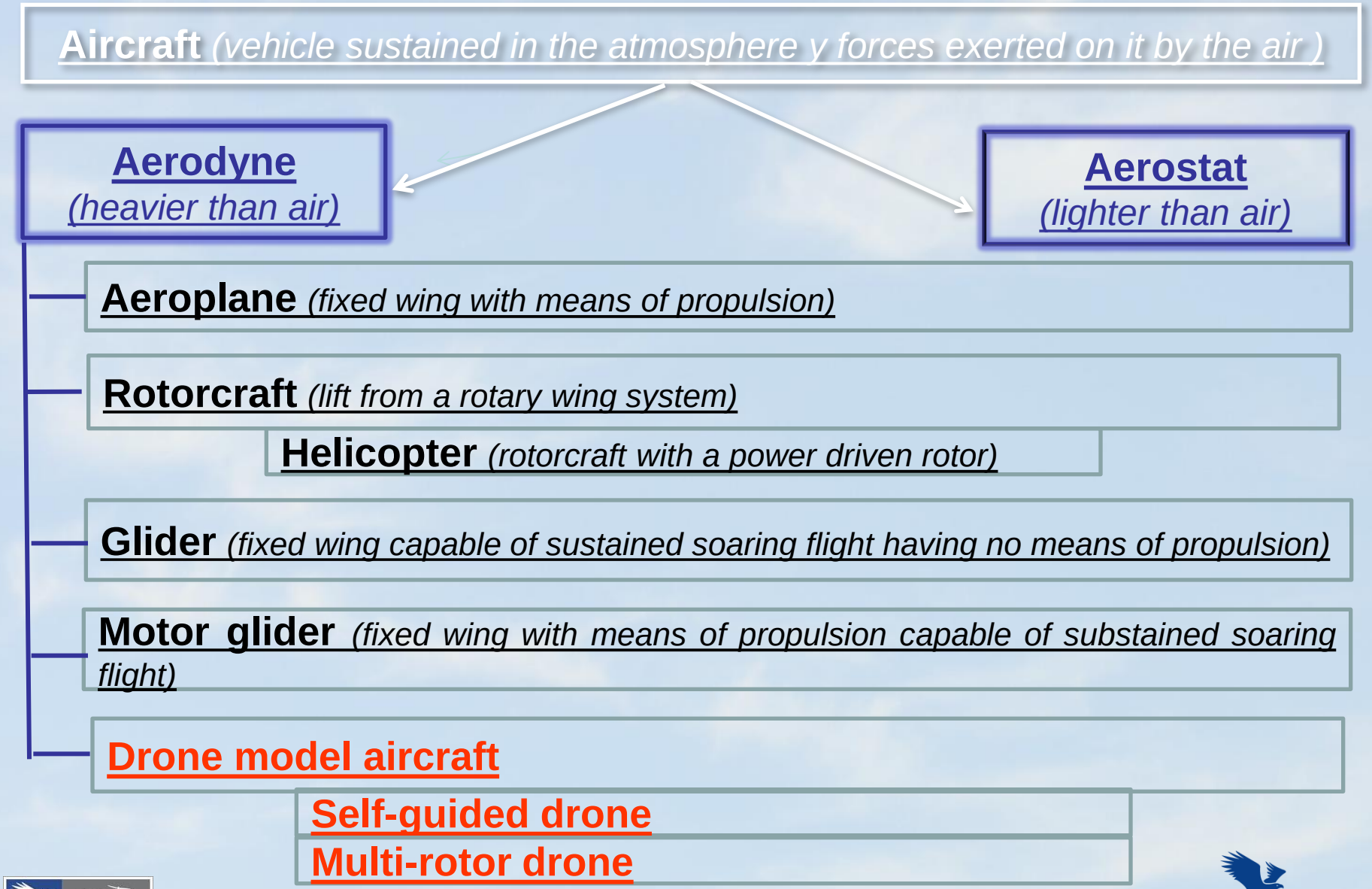
  ~~e) A model aircraft shall not be equipped with any device that allows it to be flown automatically to a selected location.~~

  ~~f)~~**e)** In the case of record attempts conducted under Part 2, the claimant(s) shall confirm that the submitted record claim is for a model aircraft record as noted in Table III.

  ⇨ *Bureau proposal submitted in the Agenda of the Plenary Meeting*

- **Recommendation 4 :** Formalize a typology of the different types of model aircraft and take it in account for the naming of the actual FAI model aircraft classes.

  ⇨ *To be evaluated at the occasion of the revision of the Volume ABR to be done in 2015*


Aircraft (vehicle sustained in the atmosphere y forces exerted on it by the air)
Aerodyne
(heavier than air)
Aerostat
(lighter than air)
Aeroplane (fixed wing with means of propulsion)
Rotorcraft (lift from a rotary wing system)
Helicopter (rotorcraft with a power driven rotor)
Glider (fixed wing capable of sustained soaring flight having no means of propulsion)
Motor glider (fixed wing with means of propulsion capable of substained soaring flight)
Drone model aircraft
Self-guided drone
Multi-rotor drone

Draft Rule *(1/2)*

Edition 1 - 1st May 2015

- **Drone model aircraft general characteristics:**
  - Maximum flying mass of 5 kg recommended

    Note: *In any case, flying mass must be under 25 kg (general characteristic of a model aircraft as defined in Volume ABR Section 4C 1.2)*
  - Noise limit of 96 dB(A) at 3 metres strongly recommended
  - Other specifications may be defined for the event such as a maximum span for a fixed wing drone or swept area of the lifting rotor(s) for a rotary wing drone
- **2 types of events are considered:**
  - Multi-rotor Contest event (FPV Racing and Freestyle Aerobatics)
  - Recreational Event based on a list of flight tasks to be done (8 tasks defined at the moment) for drones (rotorcraft or fixed-wing configurations)

Draft Rule *(2/2)*

Edition 1 - 1st May 2015

- **Local rules** may be defined by the organizer for example in order to respect the airworthiness and for airspace regulations applicable in its country which may especially concern**:**
  - How to respect the permanent VSOL of the drone (safety operator, …)
  - National regulation applicable for FPV flight (safety operator with or without a dual radio-control transmitter, RTH function, …)
  - Limitation regarding dropping of objects

⇨ *Draft Rule must be considered as guidelines for organization of an event for drone model aircraft …*

And certainly not as official or "rigid" competition rules

Conclusion

- **In accordance with Terms of Reference, UAV WG h**as completed its mission, and so can terminate its activity end of April 2015 as initially planned
- It is **not necessary to propose new FAI classes** (even as provisional rules) and/or **to establish a new CIAM Sub-Committee** in order to cover the corresponding events

  Coordination can be done on behalf of the CIAM Bureau

  Note: *a new CIAM Sub-committee will be necessary only when specific FAI classes with real international competitions will be realized*

ICAO Symposium on RPAS

Montreal 23rd to 25th March 2005

Remotely piloted or piloted aircraft sharing one aerospace system

FAI

Model Aircraft Organisations represented:

- JEREMY CARTLIDGE CQFA (MAAC) Canada
  Delegate
- NARVE OLAF LYKKEBO JENSEN FAI - FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE Norway International Organization Delegate
- Only two people representing Model Aircraft organisations. We must be better represented at later meetings and as the rules will develop, we need to be an active part to avoid unreasonable rules limiting our sport including quad copters and that kind of aircraft.
- If possible we also need to have some our representatives to be part of the panels of speakers so as to give our view and input to the symposium and as a benefit avoid the heavy cost involved in entering the event as delegate.

- Generally speaking, ICAO took this Symposium on RPAS very seriously and had their big shots running the show.
- The opening speech was done by the President of the ICAO Council.
- The first day was set up to inform the audience about the general development in rule making at different parts of the world.

- The main issue was the present status and where will we be going in regard to the development of civilian RPAS operations in non segregated airspace, i.e. to operate together with manned aircraft in the same airspace.

- This is a link to some of the information presented at the Symposium:
- http://cfapp.icao.int/tools/ikit/rpasikit/story.html

- All together almost 500 participants from more than 75 nations, one of the biggest meeting held at the ICAO Office.
- Since ICAO and its partner in this case AVUSI are commercial operations everything has a price, so do most of the documents they provide. It was promised in the invitation that all delegates would get a copy of the main document, but it turned out at a cost of $ 142,-.
- I bought one to have it for reference at the FAI office or at our President for reference.
- What most speakers was worried about was to get an internationally accepted way to do the necessary “detect and avoid” to be able to operate within controlled airspace together with normal manned aircraft without causing any hazard to the manned part.
- There were several technical workshops, but I decided to follow the legislation parts, as in my capacity as FAI representative I was not too interested in the technical parts.

- So from day two I tried to get as much information as possible about what rules are developing in the different parts of the world in relation to both RPAS and Modell Aircraft operations.
- Interesting agenda showing the wide variety of speakers, one of them was a bit special, Dave Vos representing “Project Wing” from Google. I just cannot see this happen in the near future with small RPAS flying autonomous all around in the cities.
- What almost all countries seems to have decided so far, was to keep Model Aircraft for recreation and competition out of the RPAS rules.
- But some of them mention that one would have to keep an eye on the development so as to be able to change the difference in rules that allowed the CAAs to distinguish between RPAS and Model Aircraft if the evolution warrant a change to include.

- In the part of the rulemaking, we need to be able to give our input to our different CAAs through our NACs and from the FAI towards the EASA, may be also with the help of Airsports Europe.
- We need to use every channel available to protect our hobby and sport so as to keep us separated from the RPAS rules.

FAI