EASA's new prototype for UAS regulation

The proposed rules concern the Unmanned Aircraft System (UAS), i.e. the Unmanned Airframe (UA) and the equipment to remotely control the UA. UAS activities are separated into three categories depending on the operational risk: open (low risk), specific (medium risk), certified (high risk). The certified category is not described in this prototype as it is planned to address it as an amendment to the manned aviation regulations.

Airspaces

Before diving into the different operation categories, it is notable that three types of airspaces are defined in this document:

- No UA without authorization, or no UA at all.
- UA shall comply with technical or performance specifications (equipment, function).
- UA shall comply with environmental standards.

Though defined, there is little reference to these airspaces in the following. Now let's continue with the operation categories.

The Open category

The Open category describes scenarios with clear limitations so operations falling into these limits can be performed with little interactions with regulatory bodies (registration at most).

This category is limited to UAs with a Maximum Take Off Weight (MTOW) of 25kg. Their flight is limited to a maximum of 150m altitude with a maximal range defined as two times Visual Line Of Sight (VLOS) with an observer. The UA should not carry passengers (though it is not clear if animals are concerned) or dangerous goods (e.g. explosives). Though no experience is required for the safest drones, flying in a responsible and safe manner is mandatory (not flying next to other aircraft, not flying next to emergency effort, etc.). This category is further divided into four subcategories (A0->A3) depending on the UA size and available functions.

The A0 subcategory requires no training but UA has limited weights, vertical/ horizontal range and speed. Most small toys fall in this category.

The A1 subcategory allows slightly greater horizontal range and no speed limit, however the operator needs to register the UAS and display the registration mark in a visible way.

The A2 subcategory allows for more powerful UA (in terms of voltage) but requires: staying at least at 50m from uninvolved persons, geofencing, electronic identification and auto-home functions. Moreover, the pilot should be familiar with the UA.

The A3 subcategory allows flying up to 150m high at a distance corresponding to two times VLOS with an observer at VLOS range of the pilot and communicating with him. Flight should be done at 20m (rotorcraft) /50m (otherwise) from uninvolved persons. Again geofencing, electronic identification and auto-home are required, plus a C2link

recovery function. Finally, the pilot should have received a training from a training provider recognized by EASA.

Tableau 1 Open subcategories and the respective constraints

Type	UAS Class	Height (AGL)	Range	Distance to Persons	Function	Experience required
A0	0	50m	VLOS(<100m)	-	-	-
A1	1	50m	VLOS	-	Registration	>= 14 yo
A2	2	50m	VLOS	50m	Registration Geofencing Elec. Id.	>= 14 yo Familiar with UA
A3	3	150m	VLOS EVLOS (max 2x VLOS)	20m/50m from (rotorcraft/fixed wing)	Registration Geofencing Elec. Id.	>= 14 yo Officialy trained

Tableau 2 UA Categories and the respective constraints

UAS Class	MTOW	Range	Speed	Height (AGL)	Experience required	Max AIS	Max V	Function
0	250g	100m	54 km/h	50m	None			
1	25 kg			50m	None	2	24 V	
2	25 kg			50m	None	4	48 V	C2link recovery Auto-home Geofencing Elec. Id.
3	25 kg			150m				C2link recovery Auto-home geofencing Elec. Id.

Geofencing:

This prototype defines two types of geofencing.

- An automatic geofencing with a ceiling at 50m.
- A semi-automatic geofencing, where fences can be individually disabled by the remote pilote, with a ceiling at 150m.

Electronic identification:
Electronic identification should provide the following information:

- The registration of the operator
- Class of UAS
- Type of operation
- Status of geofencing function
- Position and height

A more advanced function is called “electronic identification and management”, and it allows:

- Transmitting Intended flight plan and changes to it
- Receiving acceptance of flight plan and authorizations
- Receiving information from other manned aircraft and UA
- Receiving temporary restricted and prohibited airspace areas/volumes

The open category defines precise rules and description aimed at handling the least risky operations. More delicate cases fall into the specific category.

The Specific Category

This category is scenario specific and requires communication with the regulation authorities in order to obtain an authorization. Depending on the scenario, the regulation can be done in three different ways: the scenario falls into one of the to-be-defined EASA “standard scenarios”, the operations does not match any “standard scenarios” or the operator needs to validate its own scenarios by itself.
Authorizations are given for a limited or unlimited time and, should the operational condition change, they can be suspended, revoked or amended.

This category asks for rigorous risk assessment. For a given scenario, important risk factors to evaluate are:

- Operational area and conditions;
- Category of airspace and effects on other air traffic and ATM;
- Design features and performances of UAS;
- Type of operation;
- Level of competence of the remote pilot;
- Organizational factors; and
- Effects on the environment.

Considering a scenario, the operator must show that mitigation measures have been taken in order to obtain an authorization. Plus, a logbook containing preflight/postflight checks, time in service and defects/repairs should be maintained.
As in the Open category, passengers are not allowed.

Standard scenario

For the to-be-defined (by EASA) “standard scenarios”, risk assessment will have been conducted (by EASA) and mitigating measures will be proposed (again by EASA). Operators will have to show that they meet these mitigating measures or show equivalent mitigating measures. These need to be accepted by the competent authorities before an authorization can be delivered. Some “standard scenarios” may not have an operation manual, in which case the operator should provide one.

If an operator activity matches a “standard scenario”, a declaration from the operator can be sufficient to operate, an authorization would not be needed in this case.

Not standard scenario

In the case of a scenario for which no “standard scenario” is available, the operator should perform a risk assessment and propose mitigation measures. Moreover, an operation manual should be compiled and submitted.

This information is then assessed by the competent authority which allows or not the operation.

Light UA Operator Certificate (LUC)

The LUC allows an operator to authorize its own scenarios within its scope of approval. This comes at the cost of a strict safety organization.

The operator needs to show a safety policy with clear lines of responsibility and accountability. Moreover, for the operator activity, all safety hazards need to be identified/evaluated/managed. And functions to monitor the compliance with the established mitigations and requirements need to be defined.

The management system of the operator organization need to be documented (e.g. process for making personnel aware of their responsibility, process to amend documentation, etc.). A safety officer need to be appointed and if the organization has more than 20 full-time equivalent workers, a safety board need to be set up.

Records need to be kept for all activities and especially the previous one.