



**EASA**  
European Aviation Safety Agency

# Open Category

EASA Team  
Workshop 24 October 2016

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## Article 5: Open Category Operations

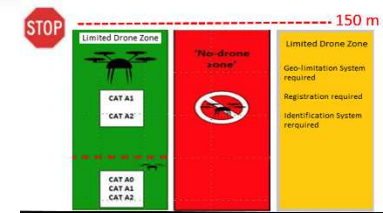
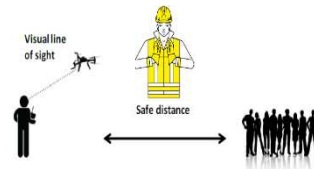
1. For operations in the 'open' category, **risks shall be mitigated through a combination of safety measures**, including:
  - (a) requirements and limitations on the operation, the UAS, and the personnel and organisations involved as detailed in Annex I to this Regulation; and
  - (b) limitations to be defined by the competent authority for geofencing purposes or for particular airspace areas.
2. Considering the different levels of risk within an 'open' category operation, this category is further divided into subcategories of operations. Each subcategory of operation is characterised by:
  - (a) the **use of a specific class of UAS** defined by the technical requirements provided in the related appendix;
  - (b) **operational limitations**; and
  - (c) **requirements for the remote pilot** and operator, as appropriate.



# Safety in the open category

## Operational limitations and rules:

- maximum height and distance, VLOS,
- areas, etc.



## Pilot competence:

- age, familiarization,
- training



## Compliance with product requirements

- limiting performance, injury risk (height, AIS, mass)
- imposing airworthiness features
- imposing functionalities (geofencing, identification)



A0	< 250 g
A1	AIS ≤ 2
A2	AIS < 4
A3	< 25 Kg

## Safety Promotion

- Awareness raising



## Efficient enforcement

- mandatory operator registration

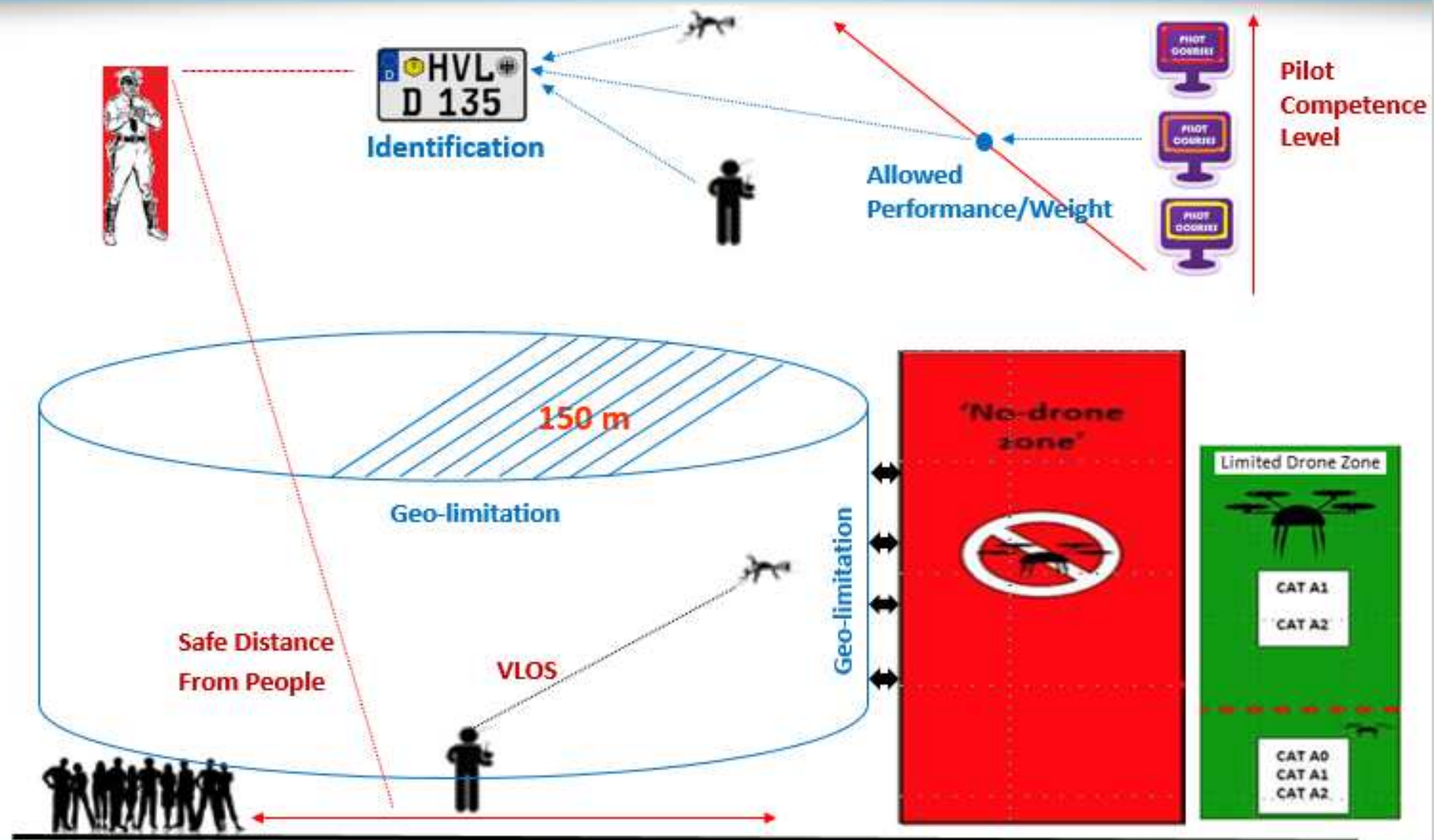


Identification





# Open Category: how the risk is contained





# Open Category (1/2)

## OPEN



	A0	A1	A2	A3
<b>Security &amp; Data Protection</b>				
Registration of operator	-	X	X	X
Geofencing	-	-	X	X
E-Identification	-	-	X	X
<b>Pilot competence</b>				
Minimum age	-	14 years old	14 years old	14 years old
Self training	-	-	X	X
Training service providers	-	-	-	X
<b>Operational Limitations</b>				
Max. horizontal distance	VLOS 100m	VLOS	VLOS	VLOS
Max. altitude	50m (150 ft)	50m (150 ft)	50m (150 ft)	150m (500 ft)
Min. distance from people	safe	safe	50m	50m; 20m (r/c)
...	...	...	...	...
...	...	...	...	...



# Open Category (2/2)

## OPEN



### Technical requirements

	CE Class 0 (toys) /homebuilt	CE Class 1	CE Class 2	CE Class 3
Class of drone				
Max mass	250 g	25 Kg	25 Kg	25 Kg
Injury Criteria		AIS ≤ 2	AIS ≤ 4	
Max speed	54 Km/h (15 m/s)			
Altitude Limitation	50 m	50 m	50 m	150 m
Horizontal distance limit	100 m	-	-	-
Lost link method	-	-	X	X
Minimum noise	-	-	X	X
Auto return home	-	-	X	X
No single failures	-	-		X

### Occurrence reporting

Serious injuries, fatalities, manned A/C involved	X	X	X	X
	<b>A0</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>



# Technology I: Geofencing Appendix I.6.a and b

‘**Geofencing class 2**’ shall mean a **permanent** automatic function to limit the access of the UA to airspace areas or volumes

‘**Geofencing class 3**’ shall mean a **selectable** function to limit the access of the UA to airspace areas or volumes

- functions defined in Appendix I.6
  - performance according to standards acceptable to the agency
  - technology neutral
  - harmonization through adopted standards
- 
- Proposed functions not suitable for unmanned aircraft without integrated flight controller



## Technology II: Electronic Identification App. I.6.c

‘Electronic identification’ shall mean a **function to identify a UA in flight without direct physical access to that aircraft**. The system shall transmit the following data as applicable according to standards acceptable to EASA:

- (a) the registration of the operator,
- (b) the class of the UAS,
- (c) the type of UA operation,
- (d) the status of its geofencing, and
- (e) its position and height.

- Technology neutral
- Appendix I.6.d adds provisions for management and dynamic functionality
- Harmonization through adopted standards



## Article 12; Airspace areas or special zones for UA operations

1. Based on the categories of operation and required mitigation measures, the competent authorities shall define airspace areas or special zones:
  - (a) where UA operations are not permitted without prior authorisation or are not permitted at all;
  - (b) where UA shall comply with defined technical or performance specifications, including mandatory equipment or functions that enable easy identification or automatically limit the airspace they can enter (geofencing);
  - (c) where UA operations shall comply with specified environmental standards.
2. The information on prohibited, restricted and special zones for UA operations, as well as on required authorisations, shall be made available in a manner and format acceptable to EASA.



## Article 12 – Standardisation and Flexibility

Article 12 is intended to

1) facilitate operation across Europe through

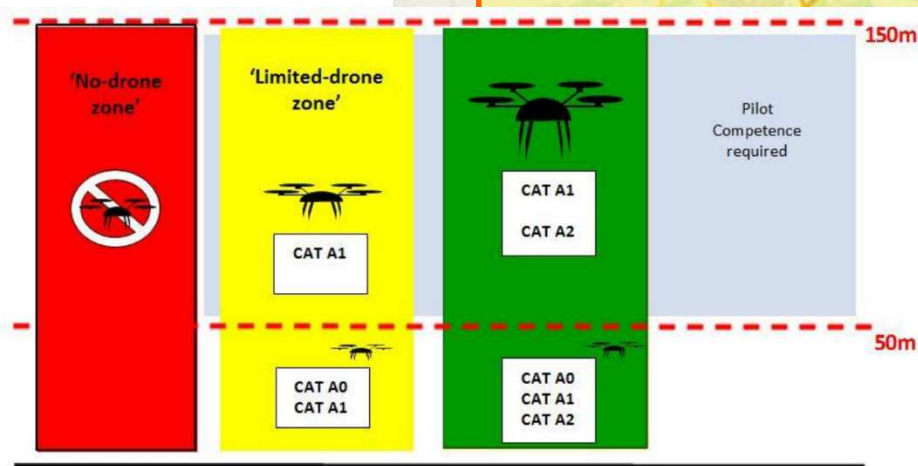
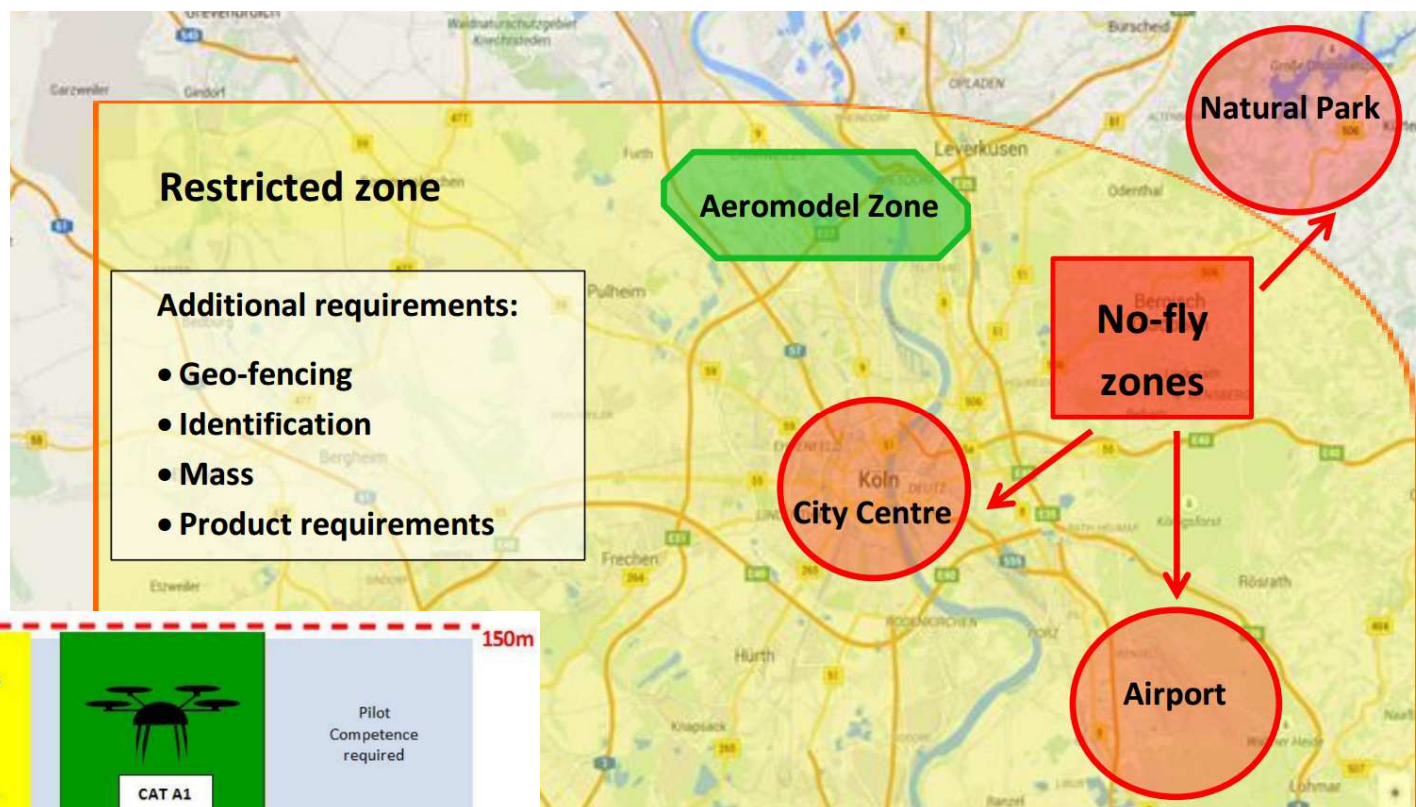
- common safety limitations through standardized sub-categories and equipment specifications
- common information and data formats.

2) give flexibility to Member states to

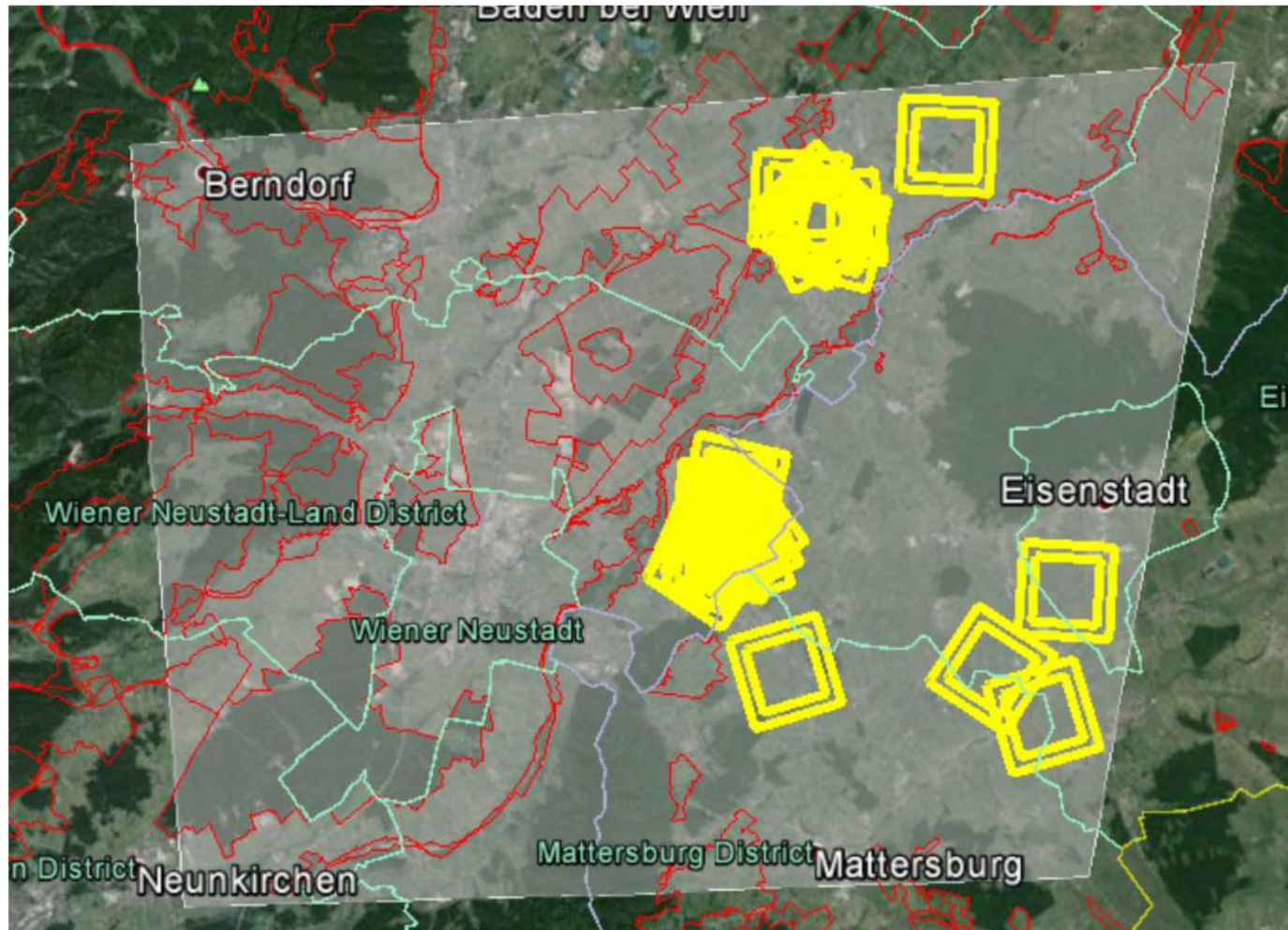
- limit access to “zones” for certain class of drones
- require prior authorisation for operation
- require mandatory equipment or functions (identification, geo-fencing, traffic management)
- define special zones for dedicated operations (test areas, model airfields, ...)



# “Zones” as introduced in Technical Opinion



## Automated determination of Operation Areas for UAS





# Comments on open category

## **Controversial comments on Open Category**

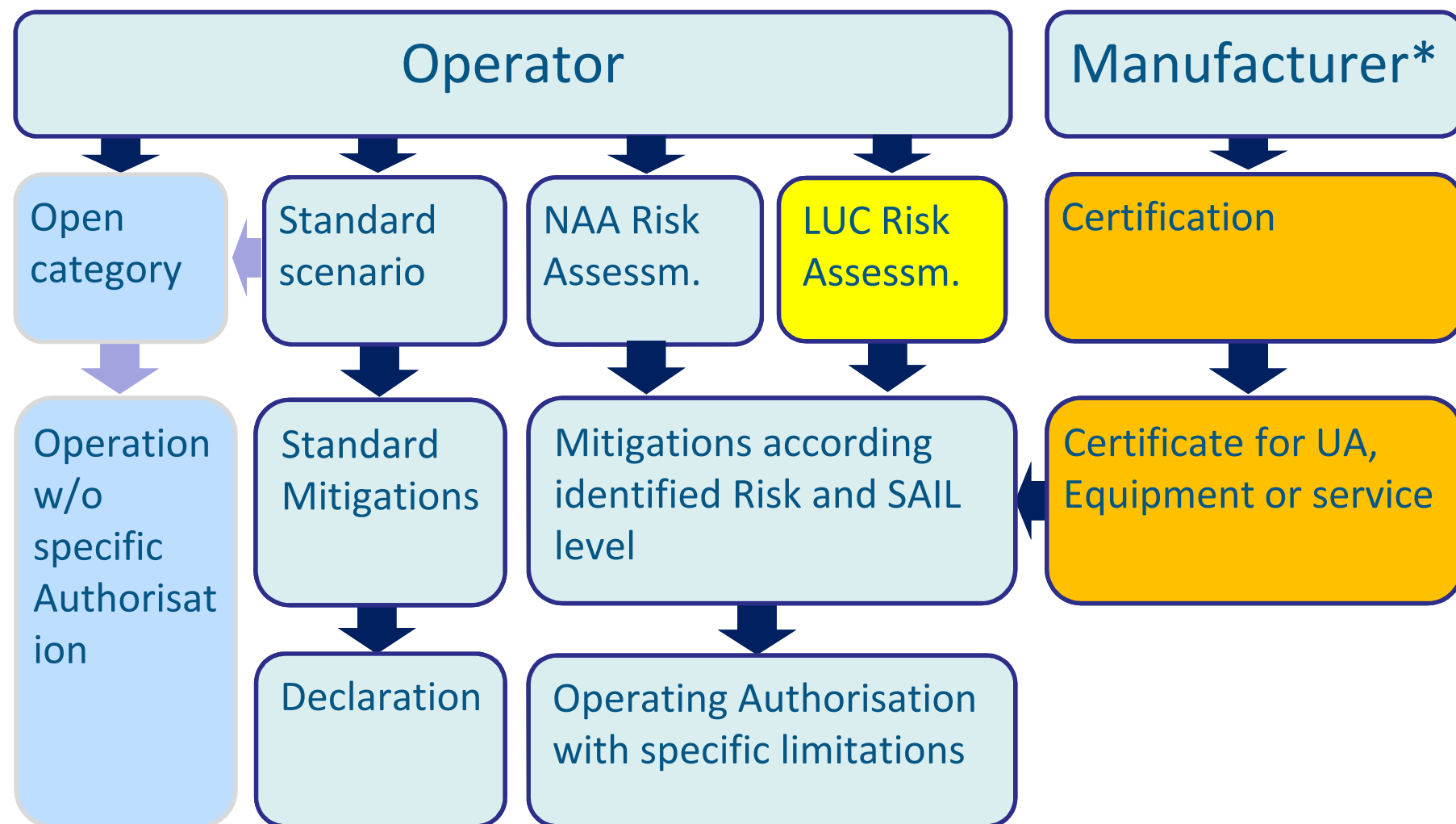
- Operational limitations too strict (height, distance)
- Class A3 not “low risk” and should be specific
- Too complicated, too many subcategories
- AIS not simple to demonstrate, use of mass proposed
- Homebuild/DIY Drones not addressed

## **Potential solutions**

- Consider adaptations to AIS criteria
- Focus on competence more than technology
- Consider subcategory with more robust pilot competence and less technology/explore category for Homebuild/DIY
- Discuss delineation Open/Specific



# Operating Authorisation





**EASA**  
European Aviation Safety Agency

**Questions and comments are  
welcome**

**Prototype regulations available  
at**

**<http://www.easa.europa.eu/easa-and-you/civil-drones-rpas>**

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# Correlation AIS-PoF-KE

PoF (%)	KE (Joules)	AIS threshold
1	44	2
10	66	3
30	92	4
50	114	5
90	194	6

Note: these values, taken from recent studies, are applicable for:

1. KE transferred to the human body
2. Body area – weighted injuries (head, shoulders, ...)
3. UAS in open area
4. Persons standing

At the present time these values are preliminary. They should be further assessed.