

# ***DRONE BUSINESS ARCHITECT OPEN SESSION***

***DE NIEUWE EUROPESE DRONE WETGEVING:  
WAT KOMT ER MIDDEN VOLGEND JAAR OP ONS AF?***

**12 November 2019**

**Michael Maes  
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# AGENDA

- Current KB
- EU rules background
- EU Delegated Act
- EU Implementing ACT
  - OPEN CATEGORY
  - SPECIFIC CATEGORY
  - CERTIFIED CATEGORY
- Need to know & transitions periods
- What's next?
  - Opinion on STS
  - Draft U-space regulation
- 'State aircraft' rules
- Droneguide session

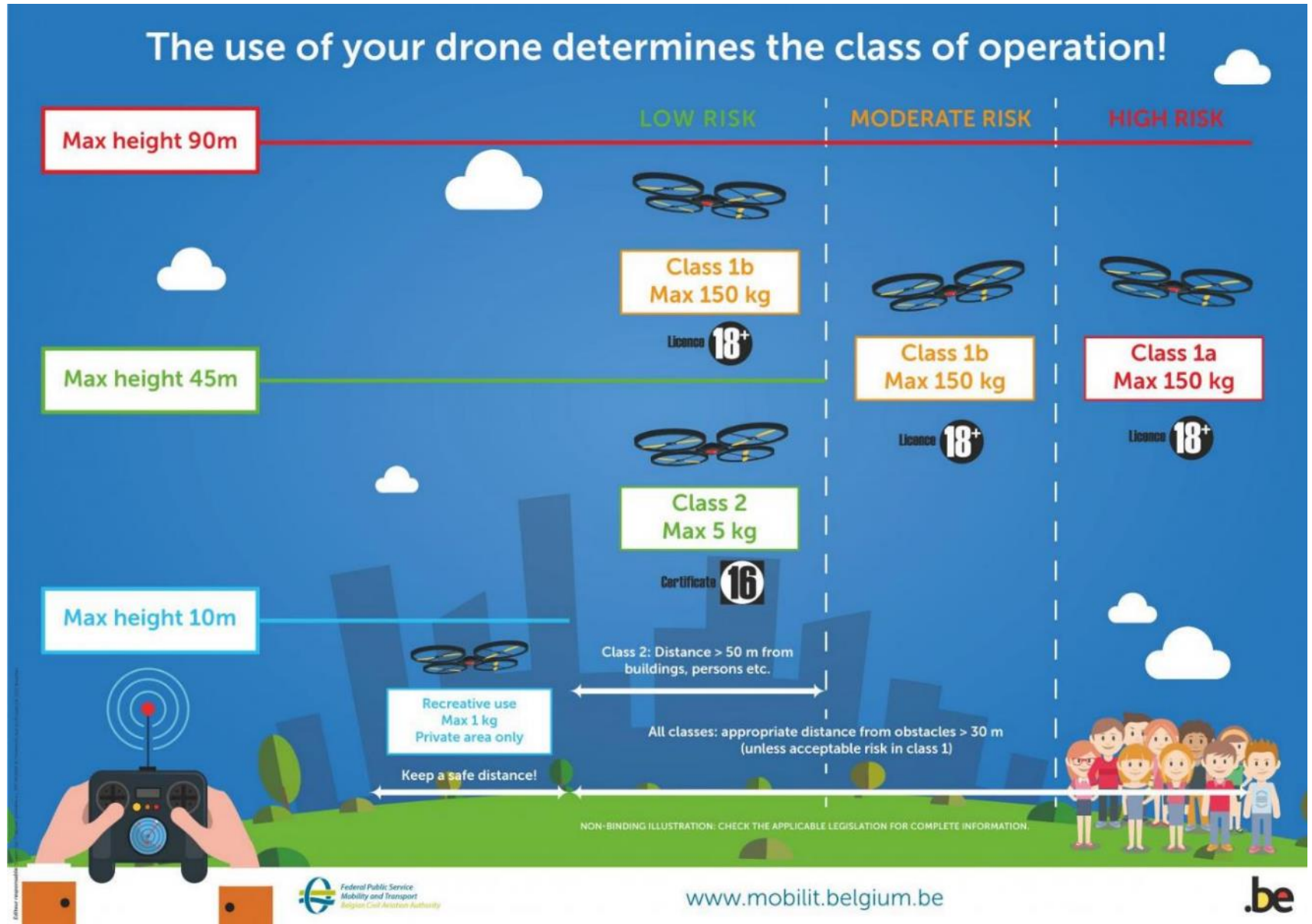


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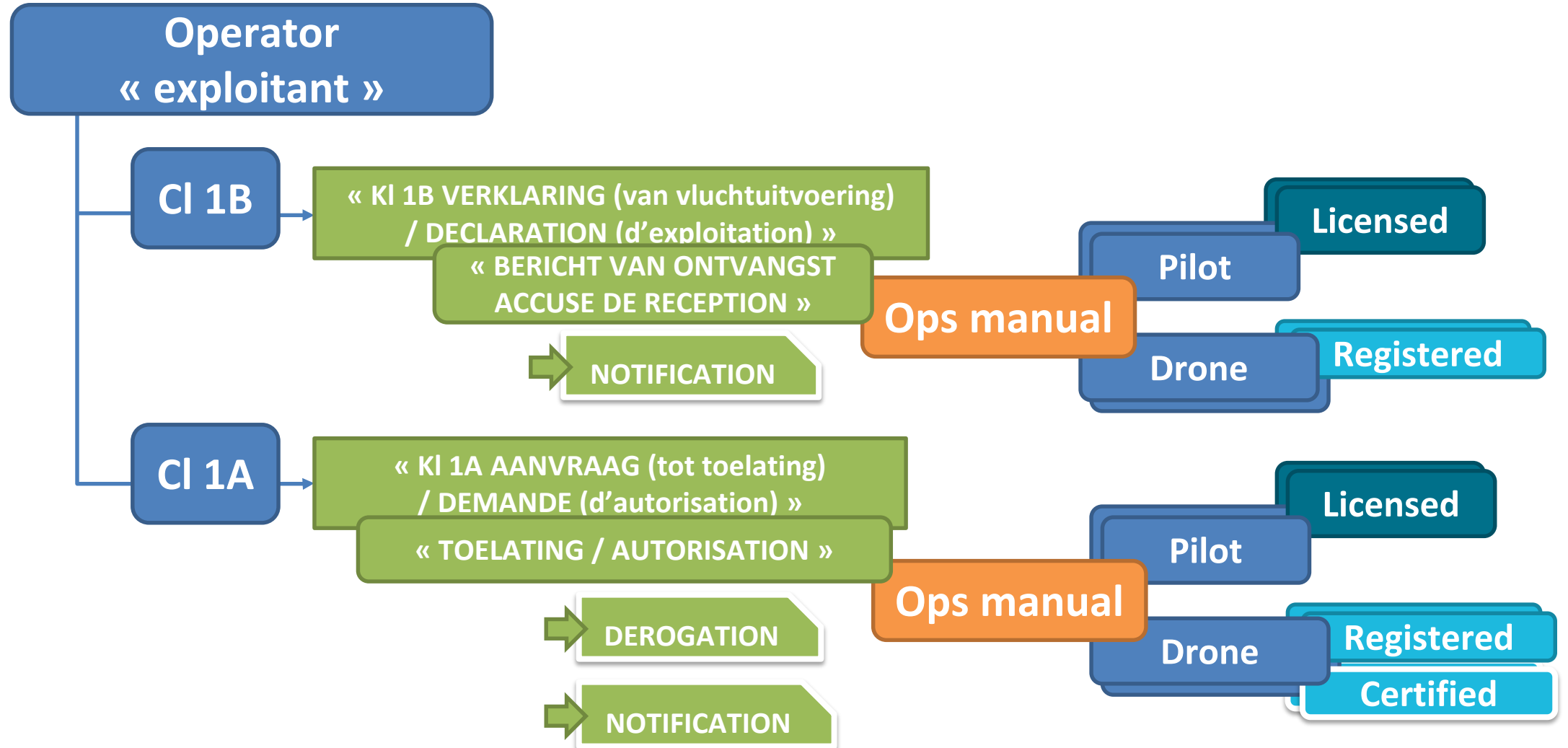
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# The current regulatory landscape



# The KB 'Class 1' landscape zoom-in





DELETE



shift

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## Overview acts

Political agreement between Commission, Council and Parliament on new Basic Regulation

- **Implementing act (IA)**

Requirements related to operation and registration

- **Delegated act (DA)**

Requirements related to CE marking, technical requirements, maintenance of UAS and third-country operators

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# Delegated Act: C-classes of drones category for Open cat.



Class	Nickname	MTOM/J	Electronic ID/ Geo-awareness	OPERATOR Registration
<b>C0</b>	'Toy drone'	<250g	NO	No, if no camera
<b>C1</b>	'Hobby drone'	<80J at $V_{term}$ or <900g	Yes	Yes
<b>C2</b>	'Prosumer drone'	<4kg	Yes	Yes
<b>C3</b>	'Professional'	<25kg	Yes	Yes
<b>C4</b>	'Aero-model'	<25kg	Yes	Yes

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## Delegated Act: C-classes of drones category for Open cat.

UAS			
Class	MTOM / Joule	Main technical requirements	Electronic ID/ geo awareness
<b>C0</b> (toy drone)	< 250g	Max speed 19m/s, max attainable height above the take-off point of 120m, no sharp edges, follow-me within max 50m	
<b>C1</b> (hobby drone)	< 80J impact at $V_{term}$ or <900g	Max speed 19m/s, max height above the take-off point of 120m or selectable and visualised height limitation, no sharp edges, follow-me within max 50m, mechanical strength, lost-link management, geo-awareness pilot warning, battery warning, be equipped with lights, max sound power level	Yes + unique SN for identification
<b>C2</b> (prosumer drone)	< 4kg	Max height above the take-off point of 120m or selectable and visualised height limitation, no sharp edges, mechanical strength, lost-link management, geo-awareness pilot warning, low-speed mode (3m/s), battery warning, max sound power level, be equipped with lights, protected C2 link	
<b>C2</b> (prosumer drone)	< 4kg	Max height above the take-off point of 120m or selectable and visualised height limitation, no sharp edges, mechanical strength, lost-link management, geo-awareness pilot warning, low-speed mode (3m/s), battery warning, max sound power level, be equipped with lights, protected C2 link	
<b>C3</b> (professional)	< 25kg < 3m in size	Max height above the take-off point of 120m or selectable and visualised height limitation, mechanical strength, lost-link management, geo-awareness pilot warning, battery warning, max sound power level, be equipped with lights, protected C2 link	
<b>C4</b> (aero-model)	< 25kg	No automatic flight, lost-link management	if required by zone of operations

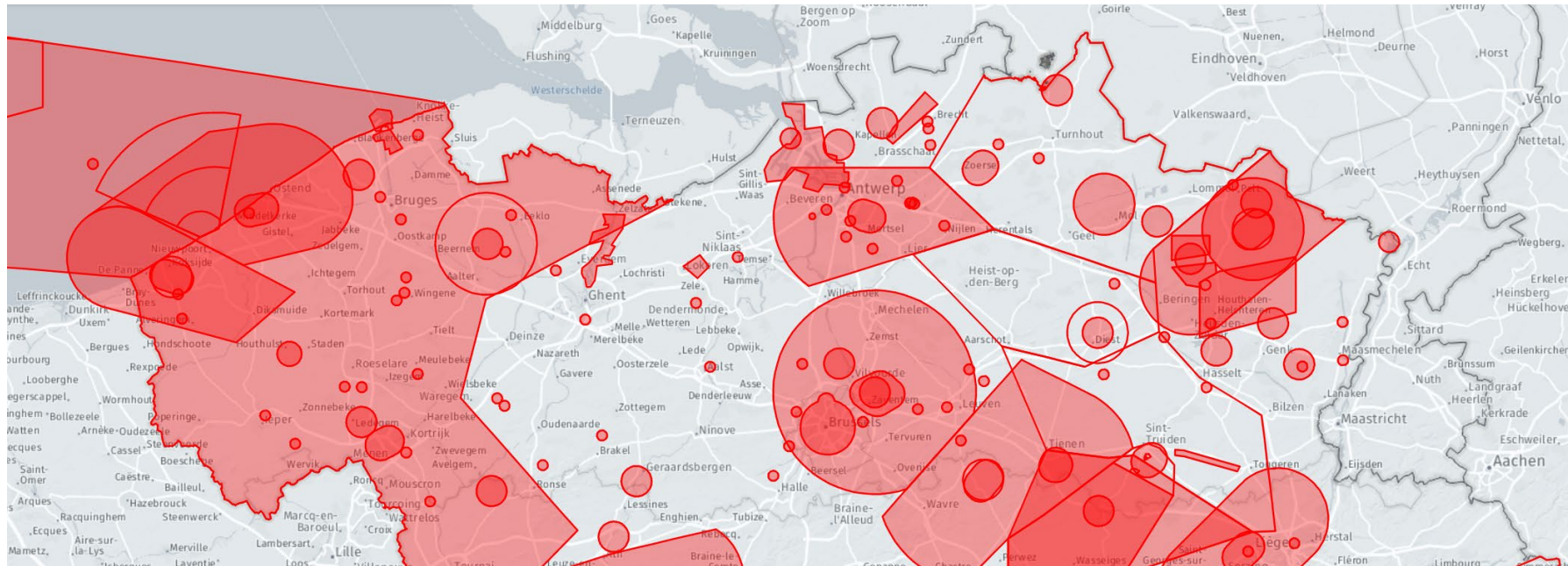
## Remote ID real-time broadcast (open cat)

- UAS operator registration nr
- Unique SN of UA
- Position & height AGL
- Direction and ground speed
- Position of pilot or the take-off point



# Geo-awareness

- Embedded map and pilot warning
- Not geo-fencing
- Pilot responsible for update prior to each flight



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# Implementing Act

New EU legislation as from July 1<sup>st</sup> 2020

# New EU legislation as from July 1<sup>st</sup> 2020



**OPEN**



**SPECIFIC**



**CERTIFIED**

# New EU legislation as from July 1<sup>st</sup> 2020



**OPEN**

**LOW RISK**

No authorisation or  
declaration required by  
operator before start of flight

**VLOS, 25kg MTOM, 120m AGL**



**SPECIFIC**



**CERTIFIED**

# New EU legislation as from July 1<sup>st</sup> 2020



**OPEN**

**LOW RISK**

**No authorisation or declaration** required by operator before start of flight



**SPECIFIC**



**CERTIFIED**

**RISK AS MANNED AVIATION**

Authorisation required by  
Certified operator  
**Certified UAS with CoA**  
Licensed pilot

# New EU legislation as from July 1<sup>st</sup> 2020



**OPEN**

**LOW RISK**

**No authorisation or declaration** required by operator before start of flight



**SPECIFIC**

**INCREASED RISK**

**Authorisation** required by CA before start of flight based on SORA  
or  
**Declaration** suffices if **standard scenario**  
or  
**LUC self-authorisation**



**CERTIFIED**

**RISK AS MANNED AVIATION**

**Authorisation** required by Certified operator  
**Certified UAS with CoA**  
Licensed pilot

# New EU legislation as from July 1<sup>st</sup> 2020



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## CERTIFIED

### RISK AS MANNED AVIATION

Authorisation required by Certified operator  
Certified UAS with CoA  
Licensed pilot

# New EU legislation as from July 1<sup>st</sup> 2020



**OPEN**



**SPECIFIC**



**CERTIFIED**

*General public  
Model Flying  
Photographers*

*BVLOS operations (linear  
inspections, aerial work, ...)  
Transport of goods*

*Air Taxi  
International IFR (cargo,  
passengers)  
Package delivery over people*

# New EU legislation as from July 1<sup>st</sup> 2020



**OPEN**



**SPECIFIC**



**CERTIFIED**

*General public  
Model Flying  
Photographers*

*Including automated  
flights*

*BVLOS operations (linear  
inspections, aerial work, ...)  
Transport of goods*

*Including autonomous  
flights*

*Air Taxi  
International IFR (cargo,  
passengers)  
Package delivery over people*



# New EU legislation as from July 1<sup>st</sup> 2020

Including autonomous flights



**SPECIFIC**

**GM clarification:**

## DEFINITION OF 'AUTONOMOUS OPERATION'

Flight phases during which the remote pilot has no ability to intervene in the course of the aircraft, either following the implementation of emergency procedures, or due to a loss of the command-and-control connection, are **not** considered autonomous operations.

An autonomous operation should not be confused with an automatic operation, which refers to an operation following pre-programmed instructions that the UAS executes while the remote pilot is able to intervene at any time.

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# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN**

**LOW RISK**

No authorisation or declaration

## UAS:

<25kg MTOM with 3 possibilities:

- 5 newly defined classes with CE marking (C0, C1,C2,C3 and C4)
- privately build
- certain existing drones

## Operation:

- Not over assemblies of people
- (E)VLOS only
- Max 120m AGL
- Not carry dangerous goods and no dropping of any material
- 3 subcategories: **over people (A1), close to people (A2) & far from people (A3)**

# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN**

**LOW RISK**

No authorisation or declaration

## UAS:

<25kg MTOM with 3 possibilities:

- 5 newly defined classes with CE marking (C0, C1, C2, C3 and C4)
- privately build
- certain existing drones

## Operation:

- Not over assembled
- (E)VLOS only
- Max 120m AGL
- Not carry dangerous goods
- 3 subcategories: **over** p

**Observers** may also be used when conducting first-person view (FPV) operations. In any case, including during FPV operations, the remote pilot is still responsible for the safety of the flight.

As the UA observer is situated alongside the remote pilot and they must not use aided vision (e.g. binoculars), **their purpose is not to extend the range of the UA beyond the VLOS distance from the remote pilot.** Exceptions are emergency situations, for instance, if the pilot must perform an emergency landing far from the pilot's position, and binoculars can assist the pilot in safely performing such a landing.

# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN A1/C0**  
*« over people »*

- You can fly over uninvolved people
- No flying over assemblies of people



**C0**

'Toy drone'

<250g

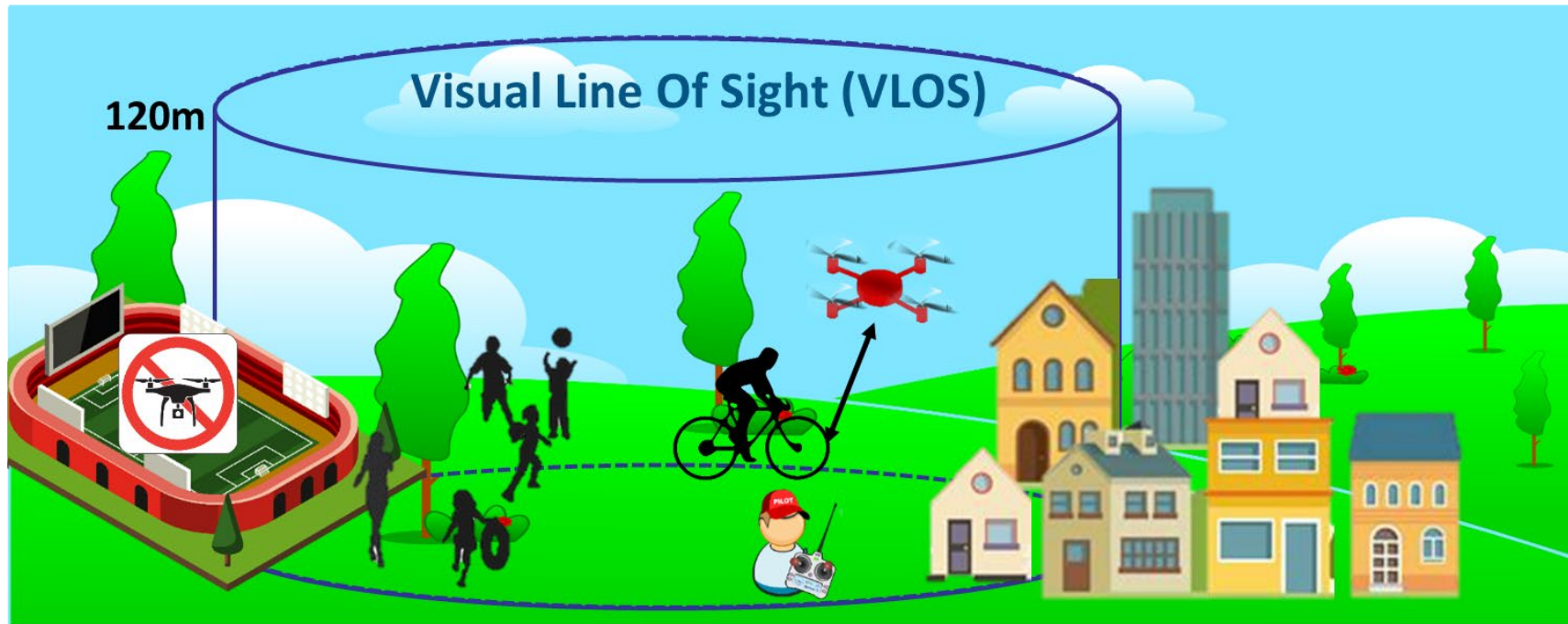
or

Privately build <250g

## New EU legislation as from July 1<sup>st</sup> 2020

### **OPEN A1/C1** *« over people »*

- You can fly over involved people (= explicit OK is given)
- No flying over assemblies of people

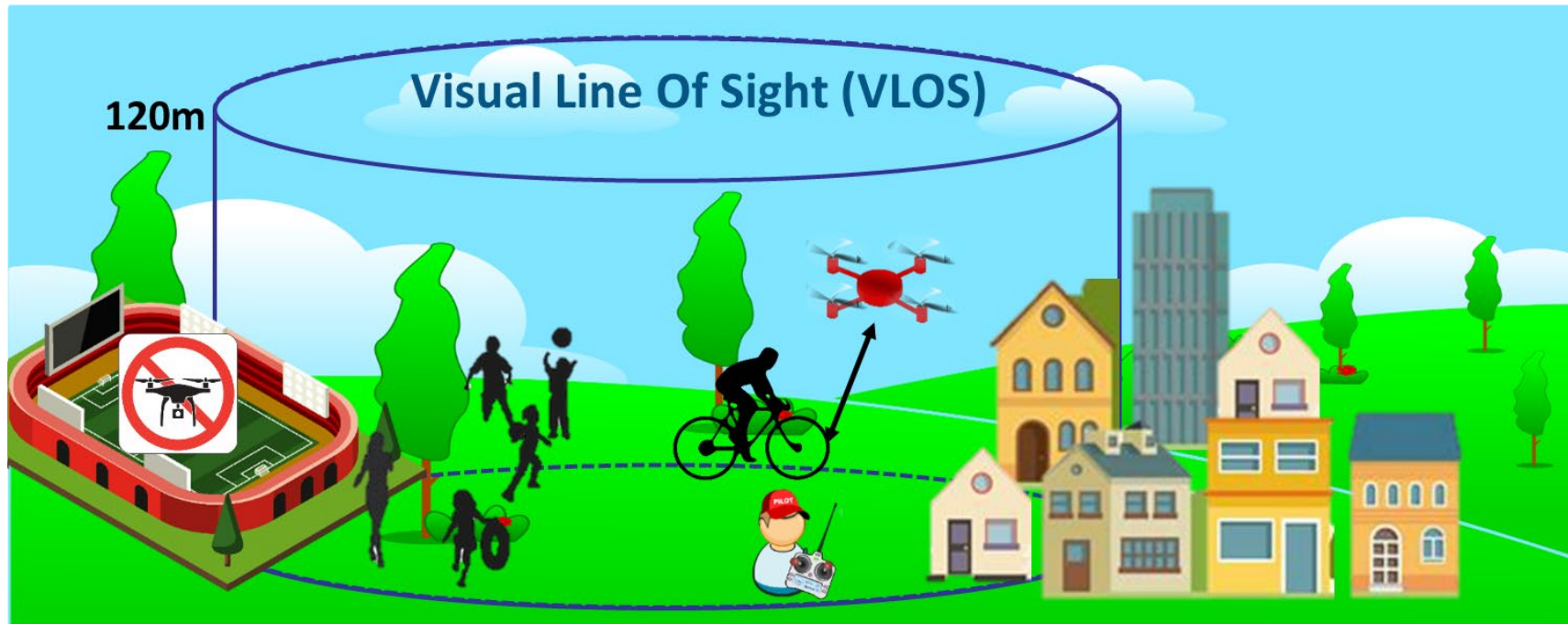


**C1** 'Hobby drone' <80J at  $V_{term}$  or <900g

## New EU legislation as from July 1<sup>st</sup> 2020

### OPEN A1/C1 « *over people* »

- You cannot intentionally fly over uninvolved people
- In case of unexpected overflight over uninvolved people, the pilot shall reduce that time as much as possible



**C1**

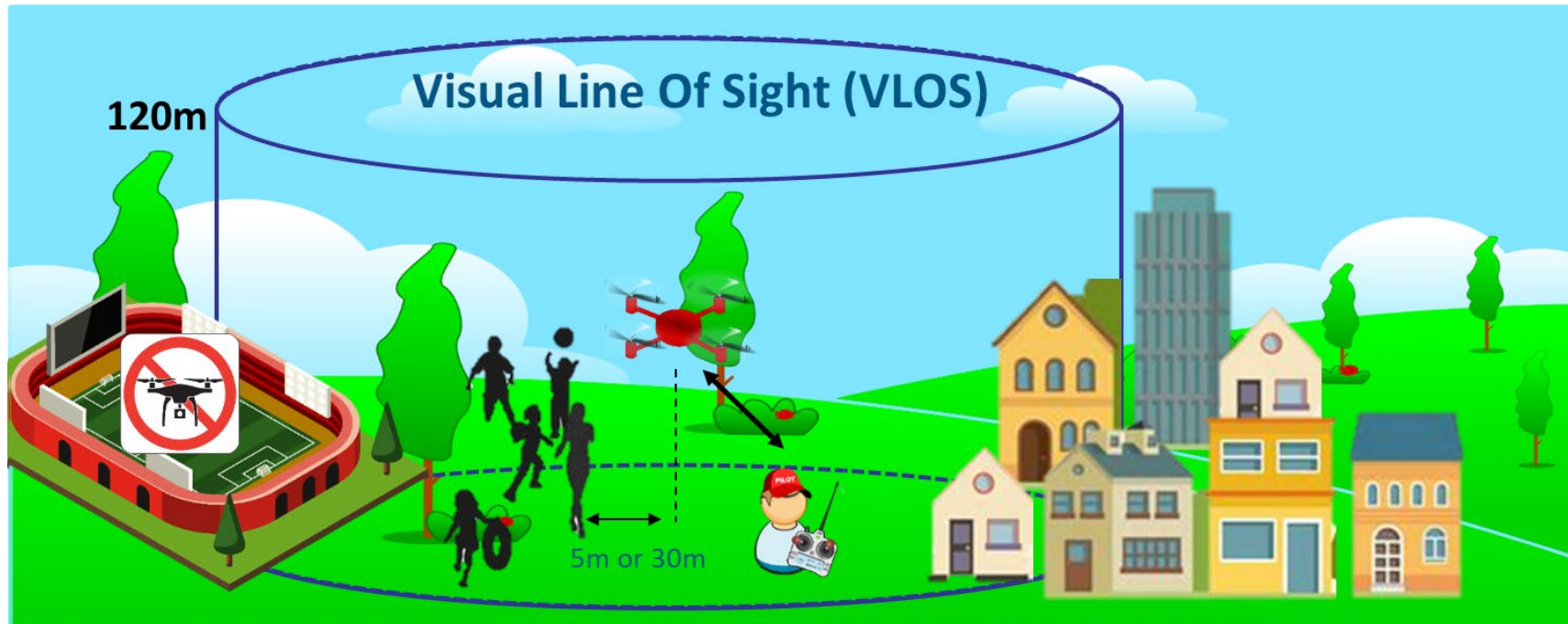
'Hobby drone'

<80J at  $V_{term}$  or <900g

# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN A2**  
*« close to people »*

- No flying over uninvolved people
- No flying over assemblies of people



**C2**

'Prosumer  
drone'

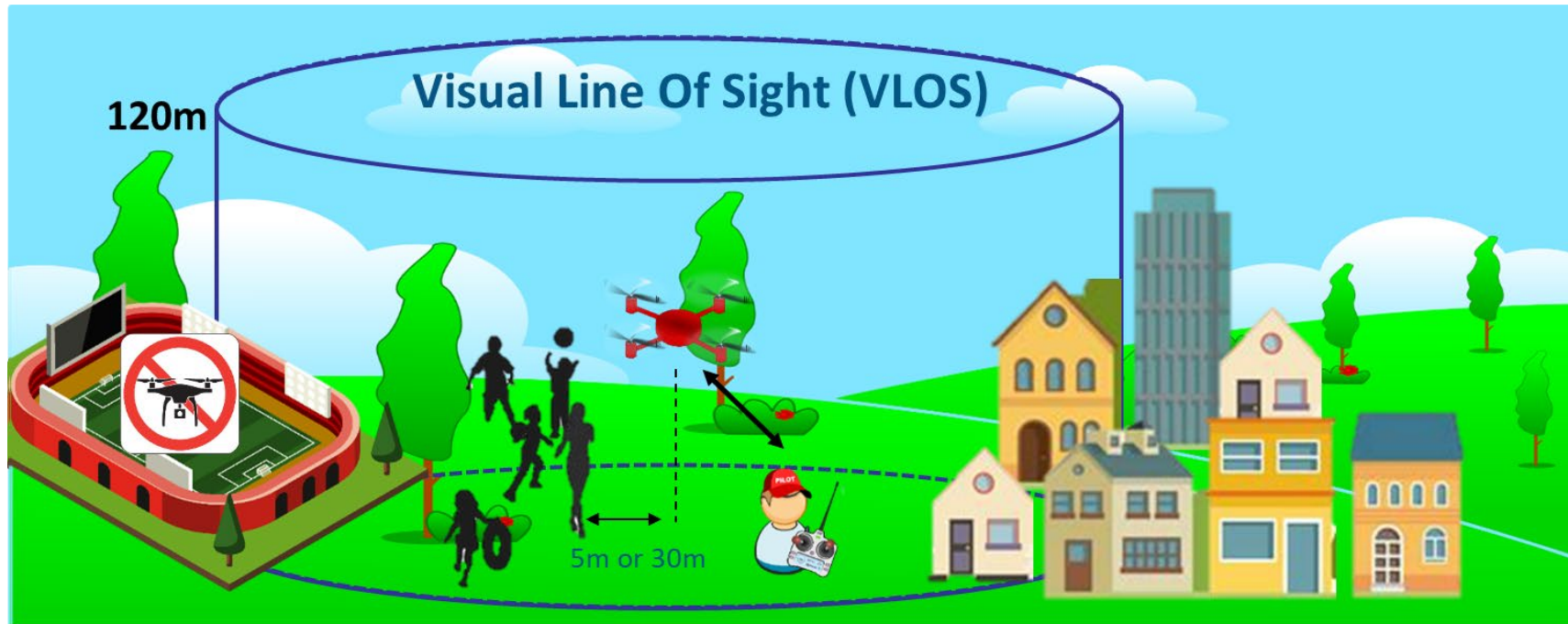
<4kg



# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN A2**  
**« close to people »**

- UAS at a horizontal distance of at least 30m from uninvolved persons, or up to a distance of 5m when low-speed mode function is activated



**C2**

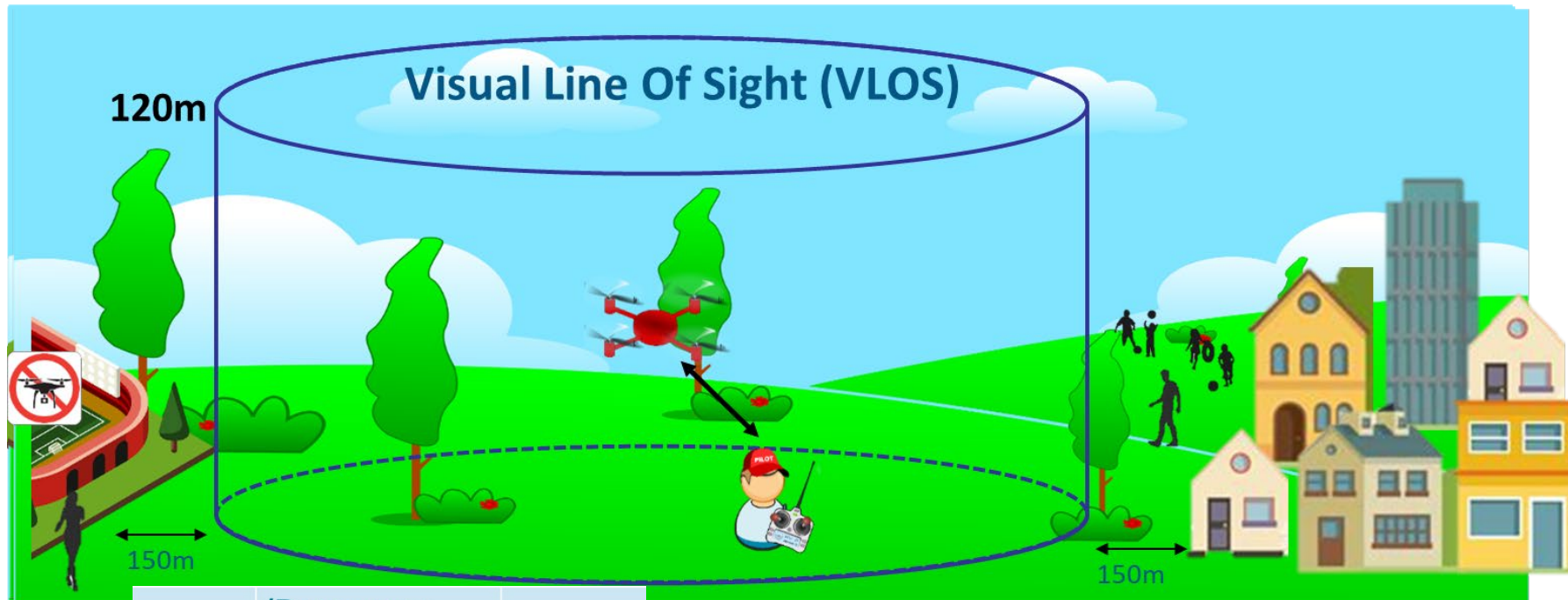
**'Prosumer  
drone'**

**<4kg**

# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN A3**  
*« far from people »*

- fly in an area where the remote pilot reasonably expects that no uninvolved person will be present endangered



<b>C2</b>	'Prosumer drone'	<4kg
<b>C3</b>	'Professional'	<25kg
<b>C4</b>	'Aero-model'	<25kg

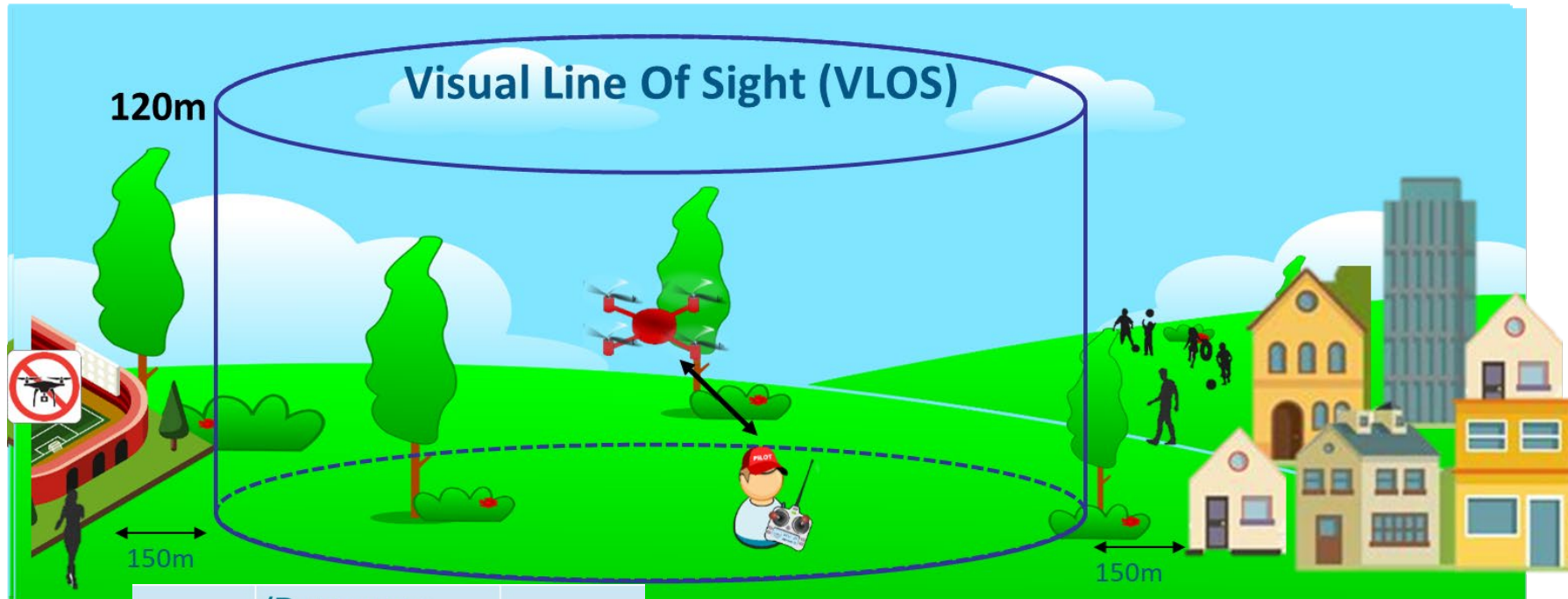
or

Privately build <25kg

# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN A3**  
*« far from people »*

- keep a safe horizontal distance of 150m from residential, commercial, industrial or recreational areas



<b>C2</b>	'Prosumer drone'	<4kg
<b>C3</b>	'Professional'	<25kg
<b>C4</b>	'Aero-model'	<25kg

or

Privately build <25kg

# New EU legislation as from July 1<sup>st</sup> 2020

## OPEN A3

« far »

AMC: AREAS WHERE UAS OPERATIONS IN A3 MAY BE CONDUCTED:

(a) If an uninvolved person enters the range of the UAS operation, the remote pilot should, where necessary, adjust the operation to ensure the safety of the uninvolved person and discontinue the operation if the safety of the UAS operation is not ensured.

(b) A minimum horizontal distance from the person that is passing the area could be estimated as follows:

(1) no less than 30 m;

(2) no less than the height ('1:1 rule', i.e. if the UA is flying at a height of 30 m, the distance of the UA from the uninvolved person should be at least 30 m), and

(3) no less than the distance that the UA would cover in 2 seconds at the maximum speed (this assumes a reaction time of 2 seconds).

This minimum horizontal distance is intended to protect people on the ground, but can be extended to property and animals.

Privately build <25kg

C4 'Aero-model' <25kg

# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN**

**LOW RISK**

No authorisation or declaration

## Pilot responsibility:

- **Explicit OK from all involved people** after risk briefing (otherwise they are considered 'uninvolved'). Just informing people does NOT make them 'involved'.
- **Keep VLOS**, eventually through help of observer (e.g. FPV)
- Not fly close to or inside area where an **emergency response** effort is ongoing (unless explicit approval)



# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN**

**LOW RISK**

No authorisation or declaration

## Pilot responsibility:

- **Explicit OK from all involved people** after risk briefing (otherwise they are considered 'uninvolved'). Just informing people does NOT make them 'involved'.
- **Keep VLOS**, eventually through help of a spotter (e.g. FPV)
- Not fly close to or inside area where an **emergency response** effort is ongoing (unless explicit approval)



AMC: 'Emergency response' is an action taken in response to an unexpected and dangerous event in an attempt to mitigate its impact on people, property or the environment.

# New EU legislation as from July 1<sup>st</sup> 2020

**OPEN**

Table made available for ease of overview



Adobe Acrobat Document

OPEN CATEGORY: not over assemblies of people; up to 120m AGL*							
VLOS/EVLOS only, except in follow-me mode within 50m distance from pilot; not drop any material							
Operation		Remote pilot competency	UAS				UAS operator registration
Sub-Cat.	Area of operation		Class	MTOM / Joule	Main technical requirements (CE marking)	Electronic ID/ geo awareness	
A1 Fly over people	You can fly over uninvolved people (not over assemblies)	<ul style="list-style-type: none"> <li>No minimum age</li> <li>Familiarised with the user's manual</li> </ul>	Privately build	< 250g	Max speed 19m/s	No	No, for as long as not equipped with a sensor able to capture personal data
			C0 (toy drone)		Max speed 19m/s, max attainable height above the take-off point of 120m, no sharp edges, follow-me within max 50m		
	You cannot intentionally fly over uninvolved people	<ul style="list-style-type: none"> <li>Minimum age to be set by Member States between 12 and 16</li> <li>Familiarised with the user's manual</li> <li>On-line theoretical knowledge examination (with <i>Proof of completion of on-line theoretical knowledge examination</i>)</li> </ul>	C1 (hobby drone)	< 80J impact at $V_{term}$ or <900g	Max speed 19m/s, max height above the take-off point of 120m or selectable and visualised height limitation, no sharp edges, follow-me within max 50m, mechanical strength, lost-link management, geo-awareness pilot warning, battery warning, be equipped with lights, max sound power level		250g or 80J impact
A2 Fly close to people	You cannot fly over uninvolved people and need to keep a safe horizontal distance of 30m from them, reduced to 5m when flying in low speed mode	<ul style="list-style-type: none"> <li>Minimum age to be set by Member States between 12 and 16</li> <li>Familiarised with the user's manual</li> <li>Hold a certificate of remote pilot competency after:                             <ul style="list-style-type: none"> <li>Online examination (<i>idem</i> as for cat A1/C1)</li> <li>Declaring practical self-training</li> <li>Additional cat A2 theoretical knowledge examination (in classroom, with <i>Certificate of remote pilot competency</i>)</li> </ul> </li> </ul>	C2 (prosumer drone)	< 4kg	Max height above the take-off point of 120m or selectable and visualised height limitation, no sharp edges, mechanical strength, lost-link management, geo-awareness pilot warning, low-speed mode (3m/s), battery warning, max sound power level, be equipped with lights, protected C2 link	Yes + unique SN for identification	
A3 Fly far from people	You should: <ul style="list-style-type: none"> <li>fly in an area where it is reasonably expected that no uninvolved people will be endangered</li> <li>keep a safe horizontal distance of 150m from residential, commercial, industrial or recreational areas</li> </ul>	<ul style="list-style-type: none"> <li>Minimum age to be set by Member States between 12 and 16</li> <li>Familiarised with the user's manual</li> <li>On-line theoretical knowledge examination (with <i>Proof of completion of on-line theoretical knowledge examination</i>)</li> </ul> ( <i>idem</i> as for cat A1/C1)	C2 (prosumer drone)	< 4kg	Max height above the take-off point of 120m or selectable and visualised height limitation, no sharp edges, mechanical strength, lost-link management, geo-awareness pilot warning, low-speed mode (3m/s), battery warning, max sound power level, be equipped with lights, protected C2 link		
			C3 (professional)	< 25kg < 3m in size	Max height above the take-off point of 120m or selectable and visualised height limitation, mechanical strength, lost-link management, geo-awareness pilot warning, battery warning, max sound power level, be equipped with lights, protected C2 link		
			C4 (aero-model)	< 25kg	No automatic flight, lost-link management	if required by zone of operations	
			Privately build		N/A		

\*: When flying a drone within a horizontal distance of 50m from an artificial obstacle taller than 105m, the maximum height of the operation may be increased up to 15 meters above the height of the obstacle at the request of the entity responsible for the obstacle





# New EU legislation as from July 1<sup>st</sup> 2020

## OPEN A1

### Pilot competencies

Operation		Remote pilot competency	UAS	
Sub-Cat.	Area of operation		Class	MTOM / Joule
A1 Fly over people	You can fly over uninvolved people (not over assemblies)	<ul style="list-style-type: none"> <li>No minimum age</li> <li>Familiarised with the user's manual</li> </ul>	Privately build <b>C0</b> (toy drone)	< 250g
	You cannot intentionally fly over uninvolved people	<ul style="list-style-type: none"> <li>Minimum age to be set by Member States between 12 and 16</li> <li>Familiarised with the user's manual</li> <li>On-line theoretical knowledge examination (with <i>Proof of completion of on-line theoretical knowledge examination</i>)</li> </ul>	<b>C1</b> (hobby drone)	< 80J impact at $V_{term}$ or <900g

# New EU legislation as from July 1<sup>st</sup> 2020

## OPEN A1

Pilot competencies

Operation		Remote pilot competency	UAS	
Sub-Cat.	Area of operation		Class	MTOM / Joule
A1 Fly over people	You can fly over uninvolved people (not over assemblies)	<ul style="list-style-type: none"> <li>No minimum age</li> <li>Familiarised with t</li> </ul>	Privately build	< 250g
	You can fly over	<ul style="list-style-type: none"> <li>Minimum age to b</li> </ul>	C0 (toy drone)	



You do an  
 « on-line theoretical knowledge examination »  
 and you get a  
 « proof of completion of on-line theoretical knowledge examination »  
 valid for 5 years

# New EU legislation as from July 1<sup>st</sup> 2020

## OPEN A2

### Pilot competencies

Operation		Remote pilot competency	UAS	
Sub-Cat.	Area of operation		Class	MTOM / Joule
<b>A2</b> <b>Fly close to people</b>	You cannot fly over uninvolved people and need to keep a safe horizontal distance of 30m from them, reduced to 5m when flying in low speed mode	<ul style="list-style-type: none"> <li>• Minimum age to be set by Member States between 12 and 16</li> <li>• Familiarised with the user's manual</li> <li>• Hold a certificate of remote pilot competency after:                             <ul style="list-style-type: none"> <li>• Online examination (idem as for cat A1/C1)</li> <li>• Declaring practical self-training</li> <li>• Additional cat A2 theoretical knowledge examination (in classroom, with <i>Certificate of remote pilot competency</i>)</li> </ul> </li> </ul>	<b>C2</b> (prosumer drone)	< 4kg

# New EU legislation as from July 1<sup>st</sup> 2020

## OPEN A2

Pilot competencies

Operation		Remote pilot competency	UAS	
Sub-Cat.	Area of operation		Class	MTOM / Joule
<b>A2</b> <b>Fly close to people</b>	You cannot fly over uninvolved people and need to keep a safe horizontal distance of 30m from them when flying in mode	<ul style="list-style-type: none"> <li>• Minimum age to be 12 in EU Member States between 12 and 16</li> <li>• Familiarised with the rules of the air</li> <li>• Hold a certificate of remote pilot competency after:                             <ul style="list-style-type: none"> <li>• Online examination (if you already hold a certificate at A1/C1)</li> </ul> </li> </ul>	<b>C2</b> (prosumer)	< 4kg



You do an  
 « additional theoretical knowledge examination » in classroom  
 and you get a  
 « certificate of remote pilot competency »  
 valid for 5 years

# New EU legislation as from July 1<sup>st</sup> 2020

## OPEN A3

### Pilot competencies

Operation		Remote pilot competency	UAS	
Sub-Cat.	Area of operation		Class	MTOM / Joule
<b>A3</b> <b>Fly far from people</b>	<p>You should:</p> <ul style="list-style-type: none"> <li>fly in an area where it is reasonably expected that no uninvolved people will be endangered</li> <li>keep a safe horizontal distance of 150m from residential, commercial, industrial or recreational areas</li> </ul>	<ul style="list-style-type: none"> <li>Minimum age to be set by Member States between 12 and 16</li> <li>Familiarised with the user's manual</li> <li>On-line theoretical knowledge examination (with <i>Proof of completion of on-line theoretical knowledge examination</i>)</li> </ul> <p>(idem as for cat A1/C1)</p>	<b>C2</b> (prosumer drone)	< 4kg
			<b>C3</b> (professional)	< 25kg < 3m in size
			<b>C4</b> (aero-model)	< 25kg
			Privately build	

# New EU legislation as from July 1<sup>st</sup> 2020

## OPEN A3

Pilot competencies

Operation		Remote pilot competency	UAS	
Sub-Cat.	Area of operation		Class	MTOM / Joule
A3 Fly far from people	You should: <ul style="list-style-type: none"> <li>fly in an area where it is reasonably expected that no uninvolved people will be endangered</li> <li>keep a safe distance of 150m from populated areas, recreation</li> </ul>	<ul style="list-style-type: none"> <li>Minimum age between 12 and 17 years</li> <li>Member States</li> <li>annual examination</li> <li>on-line theoretical</li> </ul>	C2 (prosumer drone)	< 4kg
			C3 (professional)	< 25kg
			< 3m in size	< 25kg

IDEM AS FOR A1/C1



You do an  
 « on-line theoretical knowledge examination »  
 and you get a  
 « proof of completion of on-line theoretical knowledge examination »  
 valid for 5 years

# New EU legislation as from July 1<sup>st</sup> 2020

## OPEN A3

Pilot competencies

Same as A1/C1  
 « You cannot intentionally fly over uninvolved people »  
 MTOM < 900g

Operation		Remote pilot	UAS	
Sub-Cat.	Area of operation		Class	MTOM / Joule
<b>A3</b> Fly far from people	You should: <ul style="list-style-type: none"> <li>fly in an area where it is reasonably expected that no uninvolved people will be endangered</li> <li>keep a safe horizontal distance of 150m from residential, commercial, industrial or recreational areas</li> </ul>	<ul style="list-style-type: none"> <li>Minimum age to be set by states between 12 and 16</li> <li>Familiarised with the user's manual</li> <li>On-line theoretical knowledge examination (with <i>Proof of completion of on-line theoretical knowledge examination</i>)</li> </ul> (idem as for cat A1/C1)	<b>C2</b> (prosumer drone)	< 4kg
			<b>C3</b> (professional)	< 25kg < 3m in size
			<b>C4</b> (aero-model)	< 25kg
			Privately build	

# AGENDA

- Current KB
- EU rules background
- EU Delegated Act
- EU Implementing ACT
  - OPEN CATEGORY
  - SPECIFIC CATEGORY
  - **CERTIFIED CATEGORY**
- Need to know & transitions periods
- What's next?
  - Opinion on STS
  - Draft U-space regulation
- 'State aircraft' rules
- Droneguide session





# New EU legislation as from July 1<sup>st</sup> 2020

**CERTIFIED**  
RISK AS MANNED AVIATION

## New EU legislation as from July 1<sup>st</sup> 2020

**CERTIFIED**  
RISK AS MANNED AVIATION

### UAS (DA): Certification needed if:

- a) it is designed to be operated over assemblies of people and characteristic dimension more than 3m
- b) it is designed for transporting people
- c) it is designed for transport of dangerous goods, requiring high level of robustness to mitigate risk
- d) It is used in the 'Specific Category' of operations but the operational authorisation mentions the need for certification (following risk assessment)

### Operation falls in category 'Certified' if (IA):

- The UAS is certified because of (a),(b) or (c) **AND** the operation is conducted in any of the following conditions:
  - over assemblies of people
  - involves transport of people
  - Involves the carriage of dangerous goods, resulting in high risk in case of accident
- **OR** the risk assessment shows risk cannot be mitigated without certification of the UAS and the operator, and where needed, without licensing the pilot

### > Manned aviation operational procedures

## New EU legislation as from July 1<sup>st</sup> 2020

**CERTIFIED**  
RISK AS MANNED AVIATION

### CONCLUSION:

- the transport of people is always in the ‘certified’ category
- flying over assemblies of people with a UAS that has a characteristic dimension of less than 3 m may be in the ‘specific’ category unless the risk assessment and subsequent operational authorisation concludes that it is in the ‘certified’ category
- the transport of dangerous goods is in the ‘certified’ category if the payload is not in a crash-protected container, such that there is a high risk for third parties in the case of an accident.

### IMPORTANT NOTE:

The use of a certified UA in the ‘specific’ category of operation does not imply a transfer of the operation into the ‘certified’ category.

However, the use of a certified UA in the ‘specific’ category should be considered as a risk reduction and/or mitigation measure to be taken in to account in the SORA.

# AGENDA

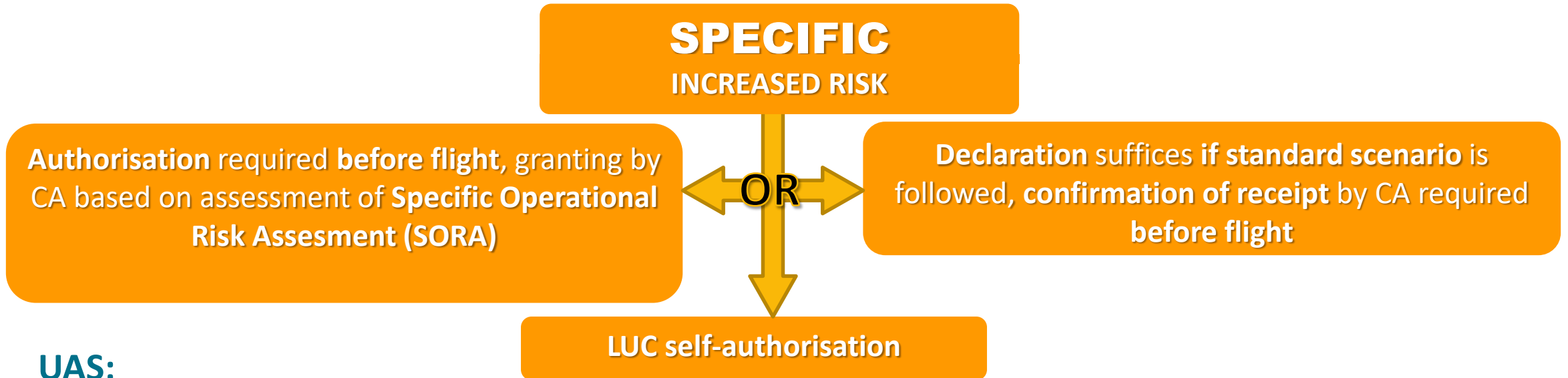
- Current KB
- EU rules background
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## New EU legislation as from July 1<sup>st</sup> 2020

**SPECIFIC**  
INCREASED RISK

## New EU legislation as from July 1<sup>st</sup> 2020



### UAS:

Any UAS

### Operation:

- Any operation which is not 'Open' nor 'Certified'
- Registration of operator + obligation to display reg. nr on UAS
- Operational conditions defined in either the authorisation or the standard scenario
- Rules of the air apply
- Logbook keeping is required

# New EU legislation as from July 1<sup>st</sup> 2020

## SPECIFIC INCREASED RISK

### Pilot competency:

- Minimum age 16 (possibility by MS to lower to 14)
- Defined in either the authorisation or the standard scenario
- At least:
  - *ability to apply operational procedures (normal, contingency and emergency procedures, flight planning, pre-flight and post-flight inspections)*
  - *ability to manage aeronautical communication*
  - *manage the unmanned aircraft flight path and automation;*
  - *leadership, teamwork and self-management;*
  - *problem solving and decision-making;*
  - *situational awareness;*
  - *workload management;*
  - *coordination or handover, as applicable.*

# New EU legislation as from July 1<sup>st</sup> 2020

**SPECIFIC**  
INCREASED RISK

## Specific authorisation:

- SORA based risk analysis
  - injuries to third parties on the ground
  - injuries to third parties in the air
  - *Damage to critical infrastructure*





## New EU legislation as from July 1<sup>st</sup> 2020

**SPECIFIC**  
INCREASED RISK

### Specific authorisation:

- SORA based risk analysis

# New EU legislation

## Specific authorisation:

- SORA based risk analysis

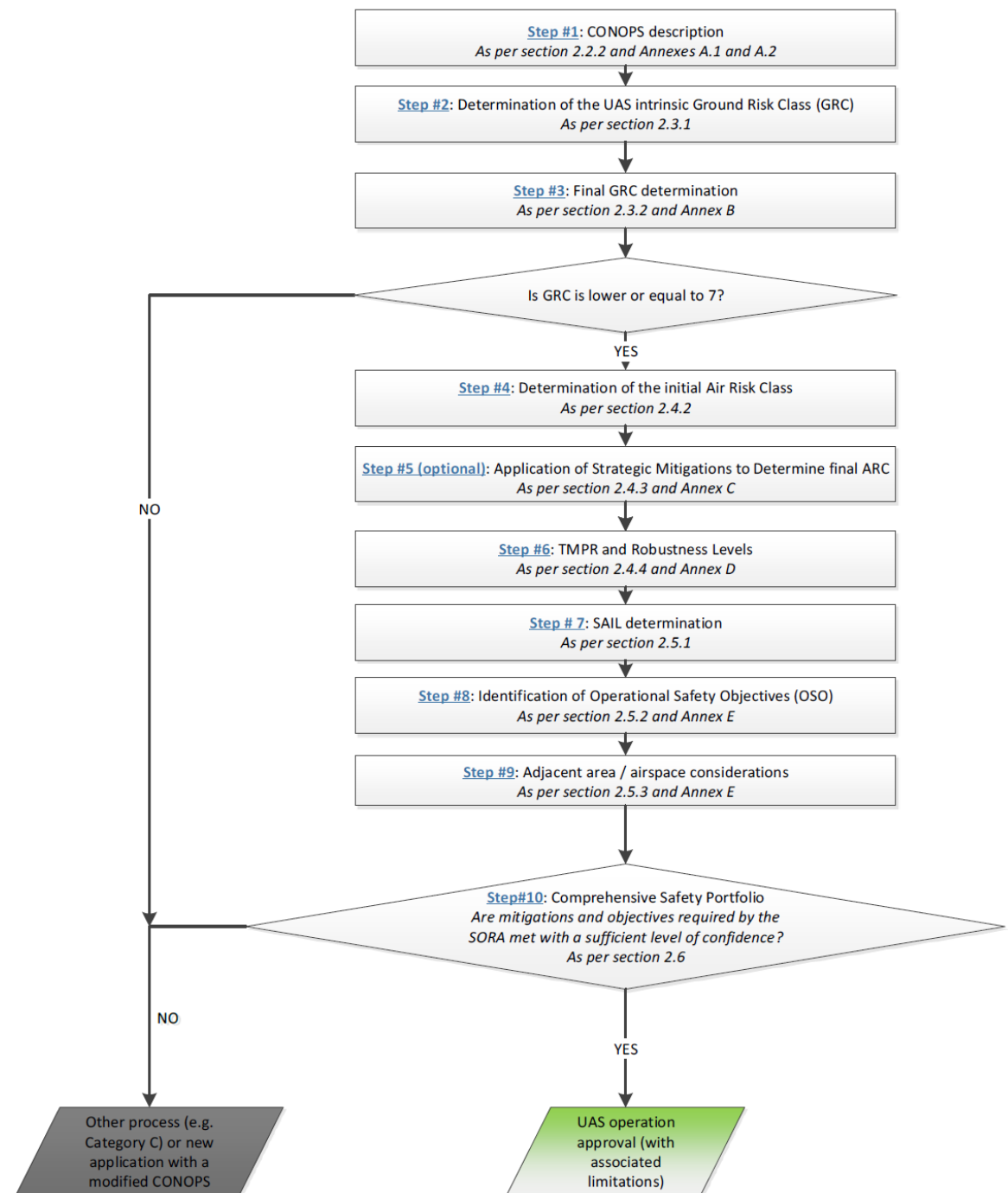


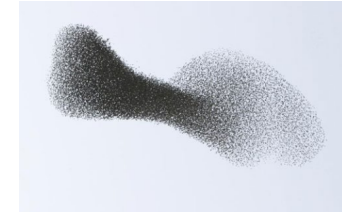
Figure 3 – The SORA process

## SORA process start

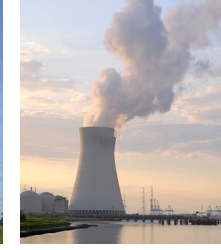
- Start only if
  - Not in the open category
  - Not covered by standard scenario
  - Not in the certified category
  - 100% sure NO-GO from the competent authority
  - The competent authority determined UAS is harmless for ground risk

# Risk categories

## Air Risk

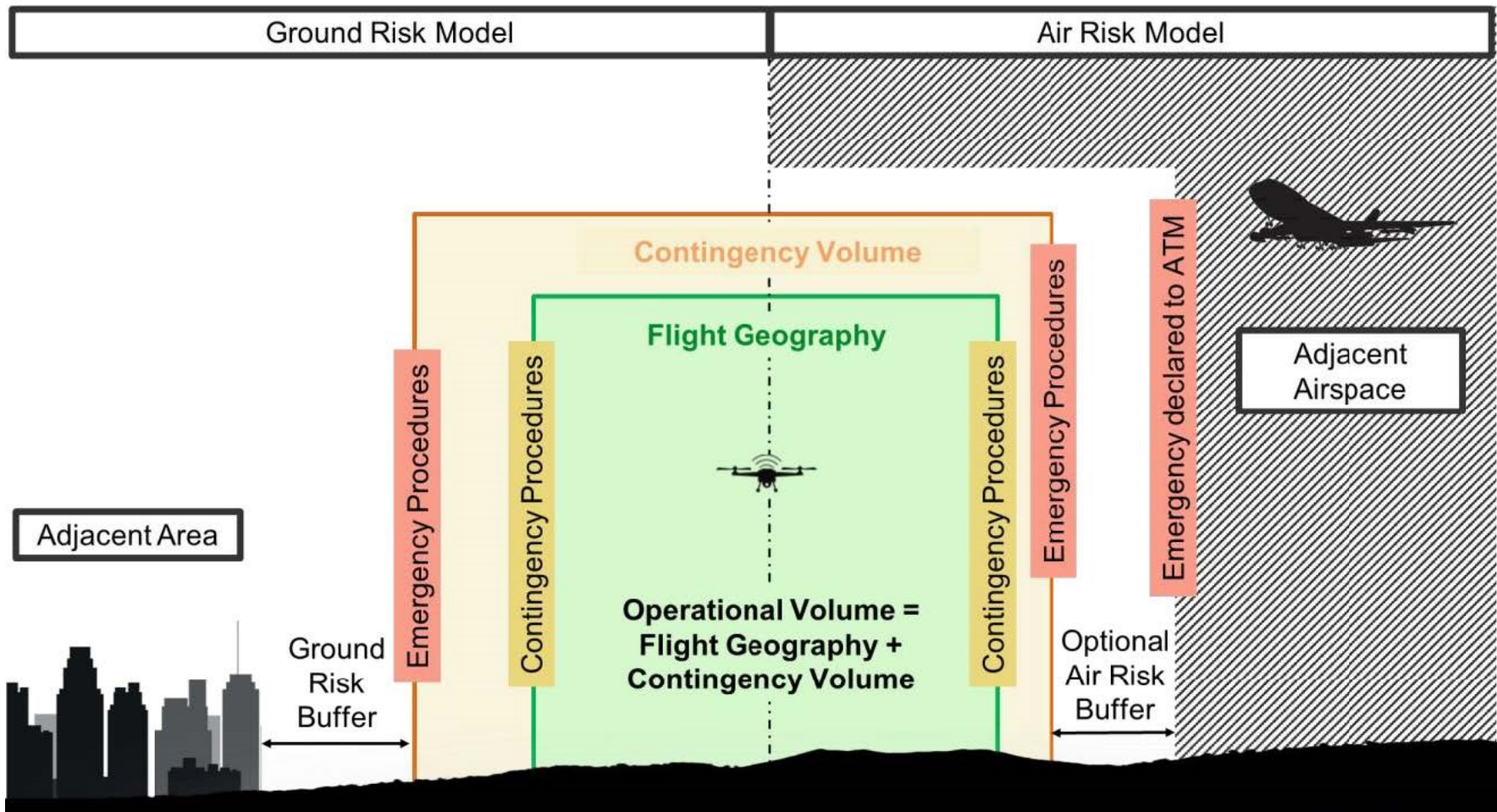


## Ground Risk



Critical infrastructure is an asset or system which is essential for the maintenance of vital societal functions

# Risk cross section (semantic model)

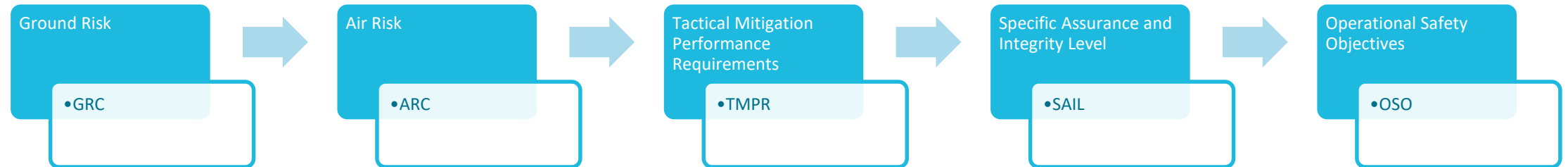


# Robustness

- Level of integrity (safety gain)
  - Example: if drone crashes, it remains within 1:1 rule
- Level of assurance (method of proof)
  - Deliver proof to remain within 1:1 rule

	Low Assurance	Medium Assurance	High Assurance
Low Integrity	Low robustness	Low robustness	Low robustness
Medium Integrity	Low robustness	Medium robustness	Medium robustness
High Integrity	Low robustness	Medium robustness	High robustness

# SORA process: outline



# Ground Risk

- Ground Risk Class (GRC)
  - Intrinsic = no changes on UAS or operation

Intrinsic UAS Ground Risk Class				
Max UAS characteristics dimension	1 m / approx. 3ft	3 m / approx. 10ft	8 m / approx. 25ft	>8 m / approx. 25ft
<i>Typical kinetic energy expected</i>	< 700 J (approx. 529 Ft Lb)	< 34 KJ (approx. 25000 Ft Lb)	< 1084 KJ (approx. 800000 Ft Lb)	> 1084 KJ (approx. 800000 Ft Lb)
Operational scenarios				
VLOS/BVLOS over controlled ground area	1	2	3	4
VLOS in sparsely populated environment	2	3	4	5
BVLOS in sparsely populated environment	3	4	5	6
VLOS in populated environment	4	5	6	8
BVLOS in populated environment	5	6	8	10
VLOS over gathering of people	7			
BVLOS over gathering of people	8			

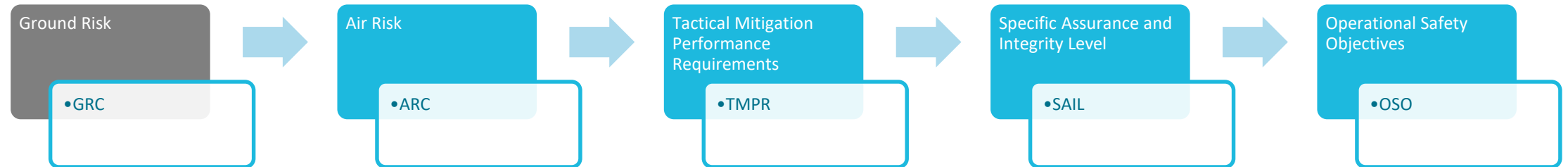


# Ground Risk

- Ground Risk Class (GRC)
  - Intrinsic = no changes on UAS or operation
- => can change based upon mitigations

Mitigation Sequence	Mitigations for ground risk	Robustness		
		Low/None	Medium	High
1	M1 - Strategic mitigations for ground risk <sup>e</sup>	0: None -1: Low	-2	-4
2	M2 - Effects of ground impact are reduced <sup>f</sup>	0	-1	-2
3	M3 - An Emergency Response Plan (ERP) is in place, operator validated and effective	1	0	-1

# SORA process: outline



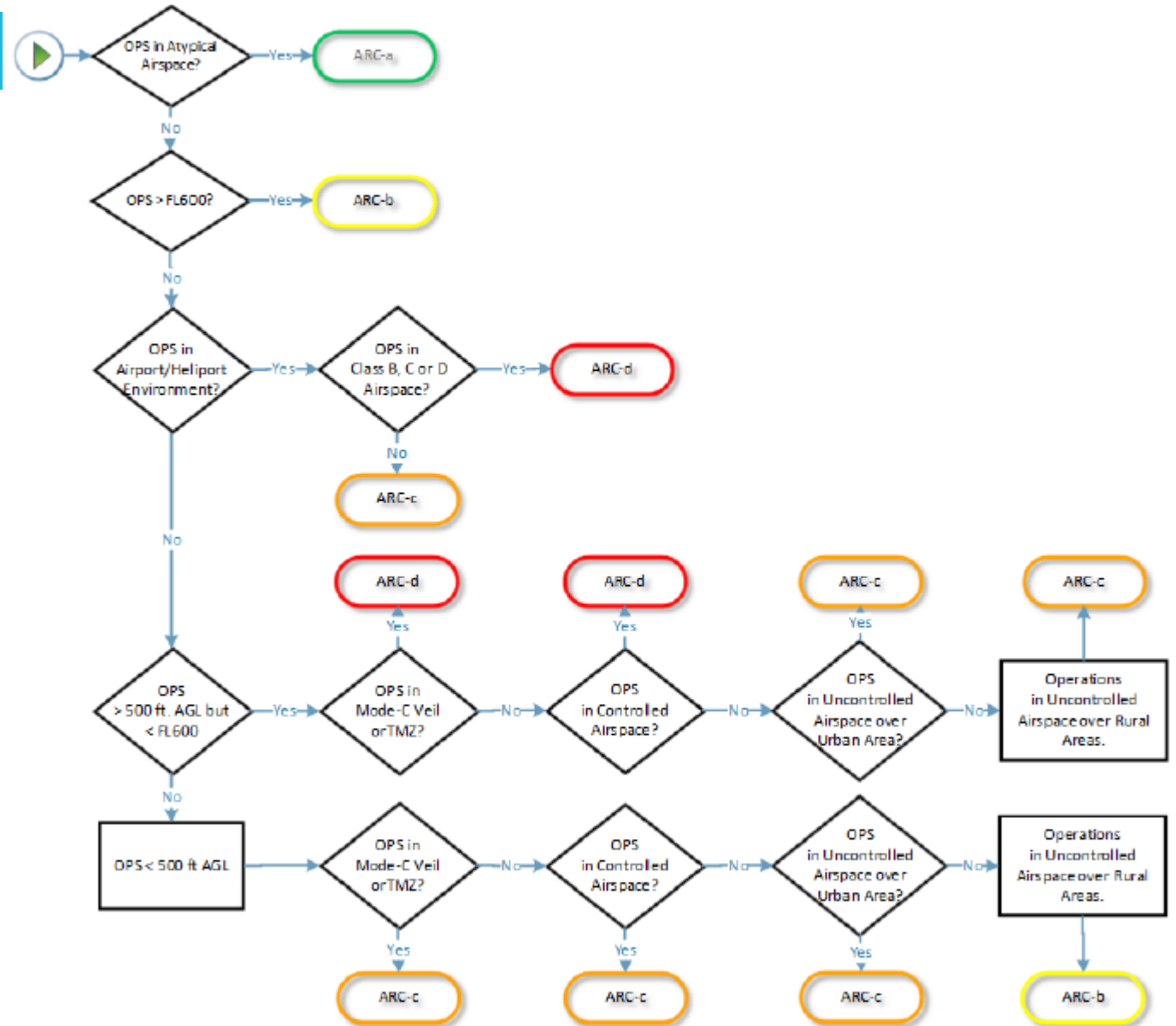
# Air Risk

- Air Risk Class (ARC)

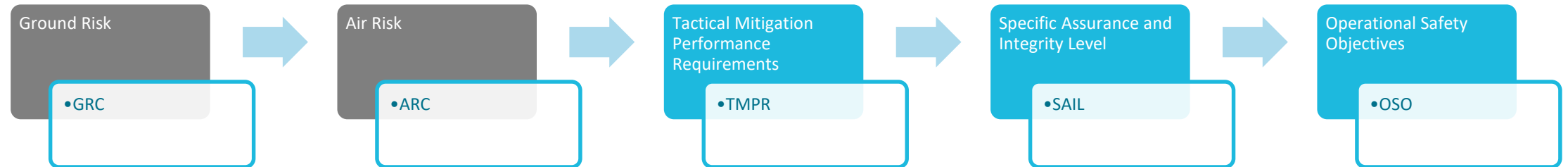
- Basic principle:

UAS in airspace with other aircraft = higher risk

UAS in airspace with no other aircraft = low risk



# SORA process: outline

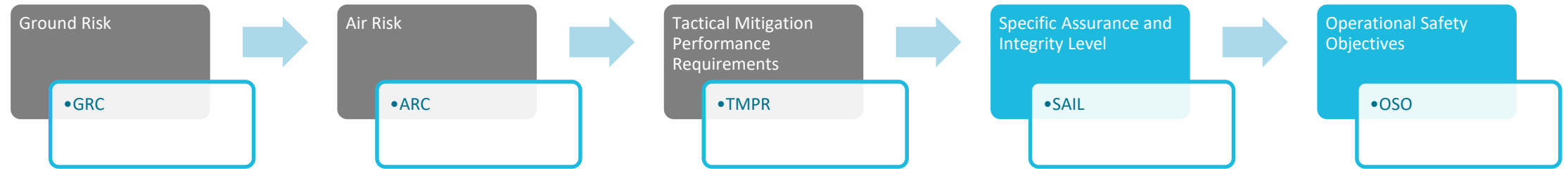


## Tactical Mitigation Performance Req

- Mitigating residual risk of a mid-air collision
  - Avoiding collisions = depending on type of airspace (ARC)
  - Mostly technical
  
- examples: Detect and avoid (ADS-B Mode-S transponder)

Residual ARC	Tactical Mitigation Performance Requirements (TMPR)	TMPR Level of Robustness
ARC-d	High	High
ARC-c	Medium	Medium
ARC-b	Low	Low
ARC-a	No requirement	No requirement

# SORA process: outline

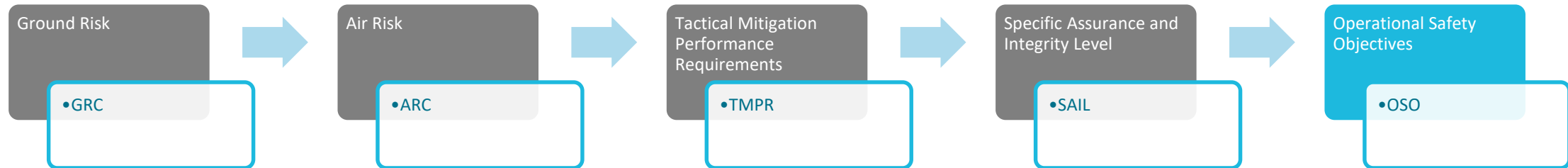


## Specific Assurance and Integrity Level

- SAIL
  - Consolidation of ground and air risk

SAIL Determination				
	Residual ARC			
Final GRC	a	b	c	d
≤2	I	II	IV	VI
3	II	II	IV	VI
4	III	III	IV	VI
5	IV	IV	IV	VI
6	V	V	V	VI
7	VI	VI	VI	VI
>7	Category C operation			

# SORA process: outline





# Operational Safety Objectives

- OSO
  - Motivation and demonstration of SAIL
  - Determination level of robustness

# SORA

- Conclusion
  - A LOT IS POSSIBLE WHEN MITIGATED, MOTIVATED AND DEMONSTRATED

# New EU legislation

## Specific authorisation:

- SORA based risk analysis: GM now defined a **Pre-Defined Risk Assessment (PDRA)**
- **It is NOT a Standard Scenario**
- Kind of pre-filled SORA analysis
- Only if the operations complies with:
  - (1) UA with maximum characteristic dimensions (e.g. wingspan, rotor diameter/area or maximum distance between rotors in case of multicopter) up to 3 m and typical kinetic energies up to 34 kJ;
  - (2) operated BVLOS of the remote pilot with visual air risk mitigation;
  - (3) over sparsely populated areas;
  - (4) less than 150 m (500 ft) above the overflowed surface (or any other altitude reference defined by the state); and
  - (5) in uncontrolled airspace.

# New EU legislation as from July 1<sup>st</sup> 2020

**SPECIFIC**  
INCREASED RISK

**Standard scenario:**

\*: Only involved people present

# New EU legislation as from July 1<sup>st</sup> 2020

## SPECIFIC INCREASED RISK

### Standard scenario:

- Declaration only, conf. of receipt is required
- EASA working on it (see Opinion No 05/2019)
- Can be nationally defined at interim
- Options:
  - *<3m UAS in VLOS over 'controlled ground area'\* with no assemblies of people*
  - *<1m UAS in VLOS except over assemblies of people*
  - *<1m UAS in BVLOS over sparsely populated areas*
  - *<3m UAS in BVLOS over 'controlled ground area'\**
- Below 120m AGL in uncontrolled airspace or in controlled airspace with individual ATS flight authorisation

\*: Area where only involved people are present

# New EU legislation as from July 1<sup>st</sup> 2020: operations abroad

**SPECIFIC  
INCREASED RISK**

Authorisation granted by CA of registration based on assessment of SORA

**OR**

Declaration with conf. of receipt by CA of registration based on standard scenario

**Cross border operations or operation outside state of registration**

- *Operator revises mitigation measures for:*
  - *local airspace*
  - *terrain*
  - *population*
  - *climate*
- *Revision sent by operator to CA of operation*
- *Other CA assesses the update and issues 'Statement of acceptance' to operator and CA of registration*
- *Operator forwards declaration and confirmation of receipt (sent by CA of registration) to the CA of operation*

# AGENDA

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**OPEN category - Low risk**  
**NO-PRE APPROVAL**  
**LIMITATIONS: 25 kg, VLOS,**  
**height <120m, system of**  
**zones**  
**3 Sub-categories: fly over,**  
**close, far from people**

*General public*  
*Model Flying*  
*Photographers*

**SPECIFIC - Increased risk**  
**Authorisation by NAA**  
**based on specific**  
**operation risk assessment**  
**(SORA)**  
**Declaration in case of**  
**standard scenario; LUC**

*BVLOS operations (linear*  
*inspections, aerial work, ...)*  
*Transport of goods*

**CERTIFIED - Risk as**  
**manned aviation**  
**Certification of UAS,**  
**approval of the operator**  
**and licensed pilot (unless**  
**autonomous flight)**

*Air Taxi*  
*International IFR (cargo,*  
*passengers)*  
*Package delivery over people*



## What members states can still organize

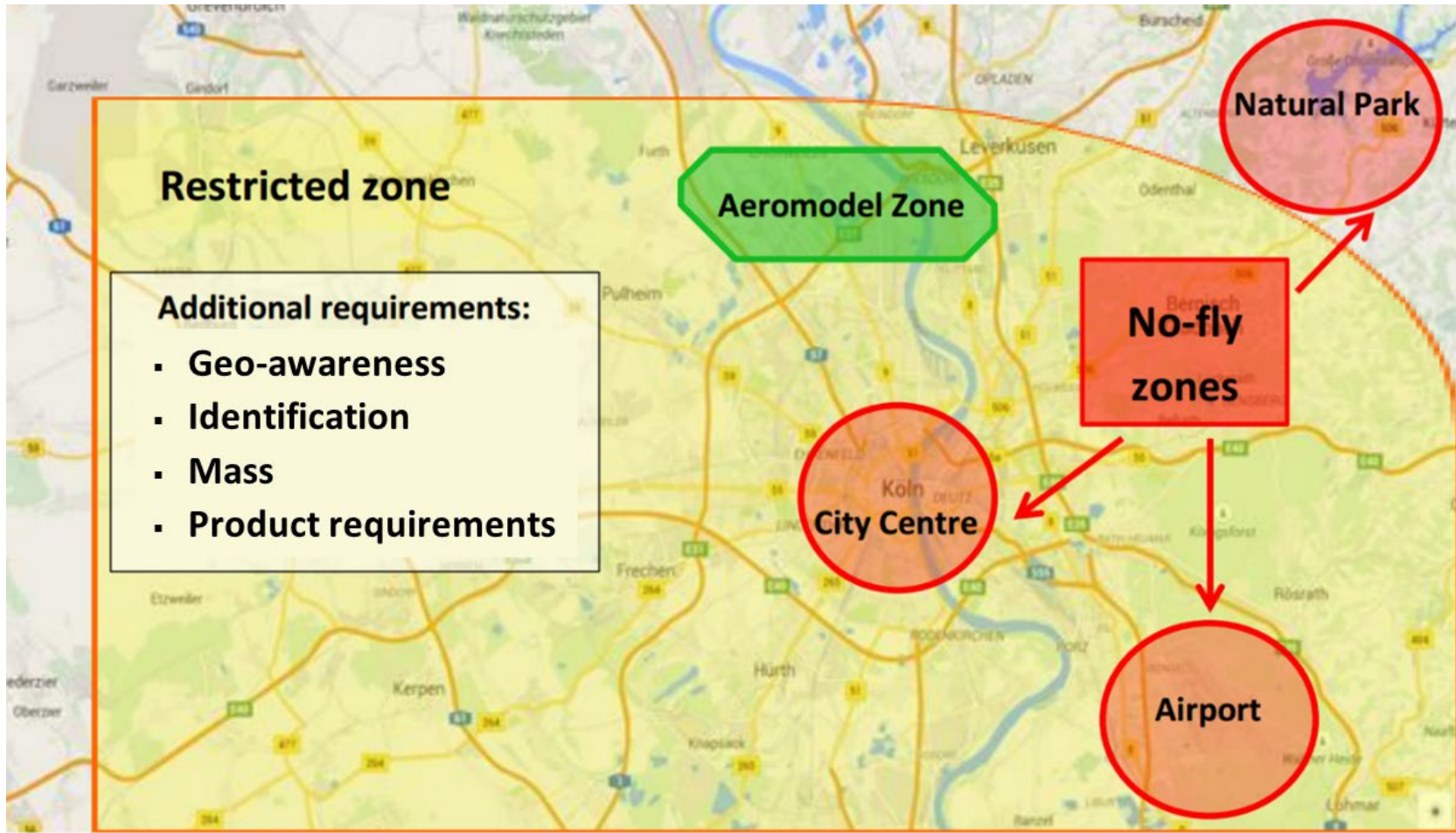
Geographical zoning (made publicly available in digital format)

- Prohibit certain or all operations
- Request particular conditions for certain or all operations
- Request a prior operational authorisation for certain or all operations
- Subject operations to specific environmental standards
- Allow access to certain UAS classes only
- Allow access only to UAS equipped with certain technical features, e.g. remote ID or geo-awareness systems

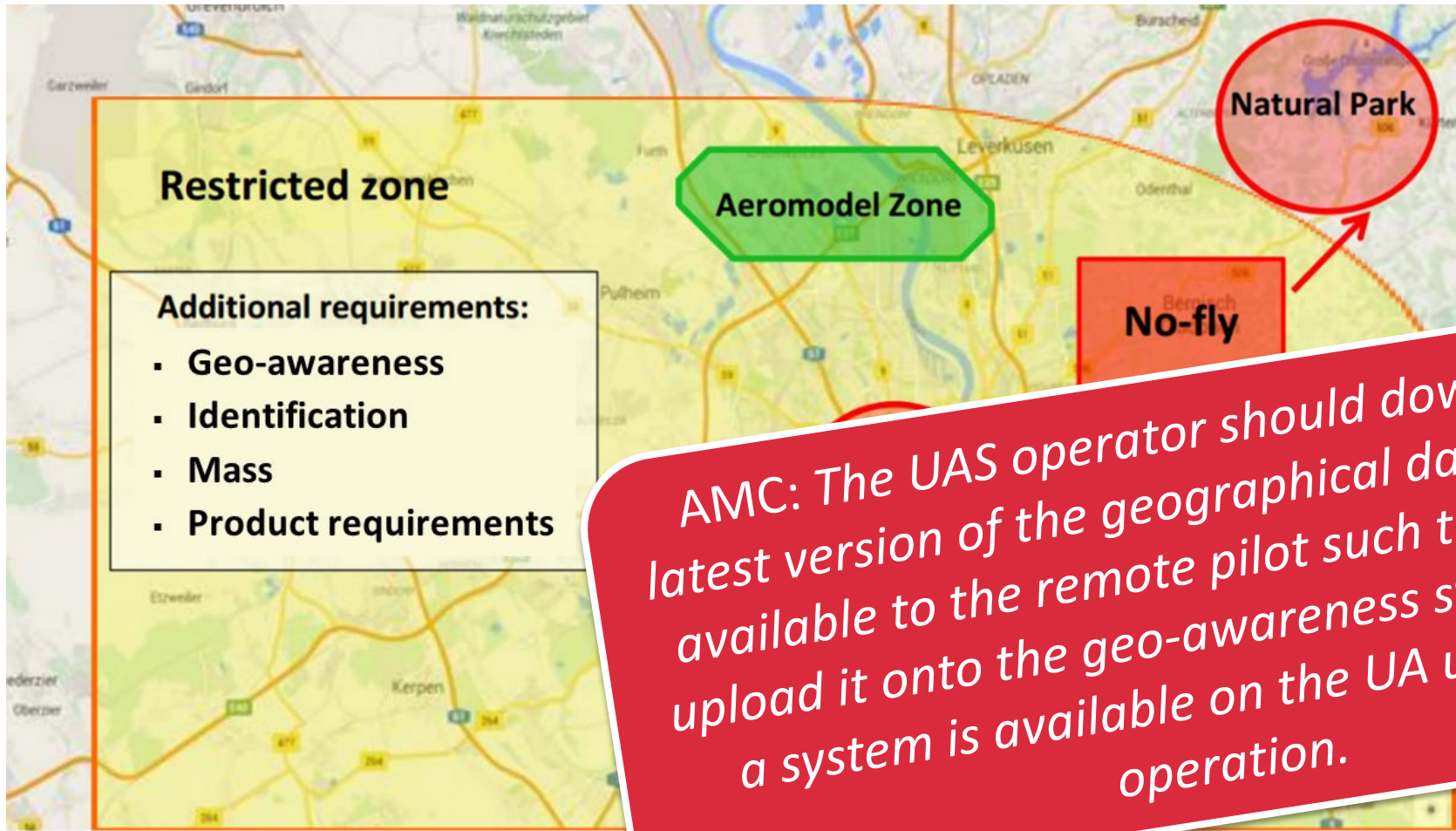
OR

- Designate zones where operations are exempt from one or more 'open' category requirements

# What members states can still organize



# What members states can still organize



AMC: The UAS operator should download the latest version of the geographical data and make available to the remote pilot such that they can upload it onto the geo-awareness system, if such a system is available on the UA used for the operation.

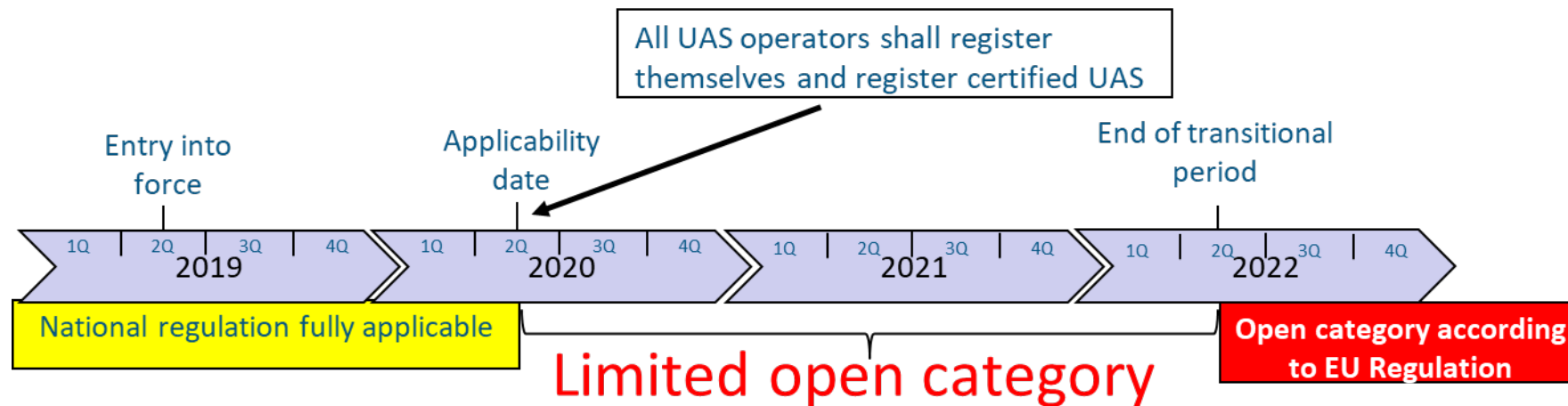
# Transition periods



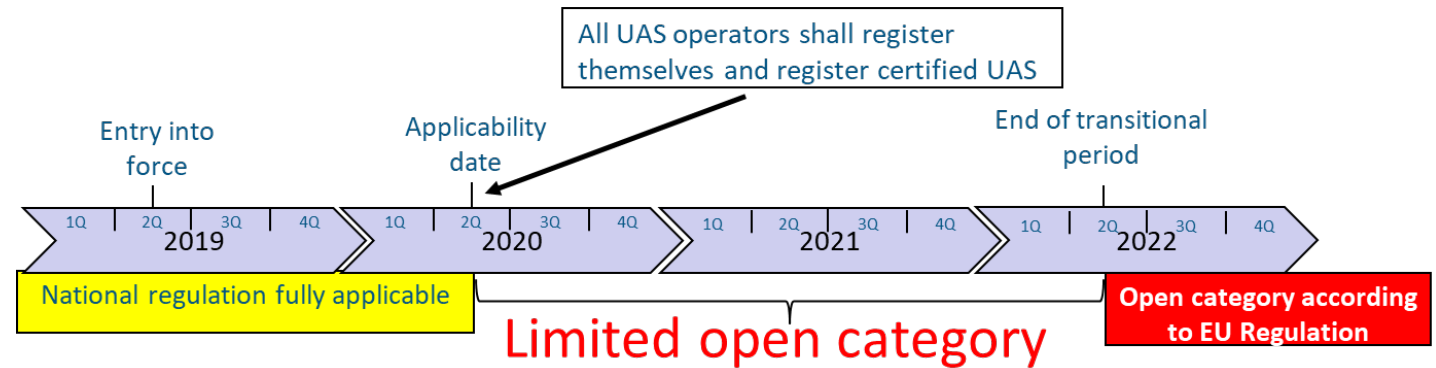


**What if my drone is not Cx- compliant?  
Am I even not allowed to use it in the open category?**

**Answer:  
YES,  
but only until July 1<sup>st</sup> 2022 in the “Limited” Open category**



## Quid for my existing drone?

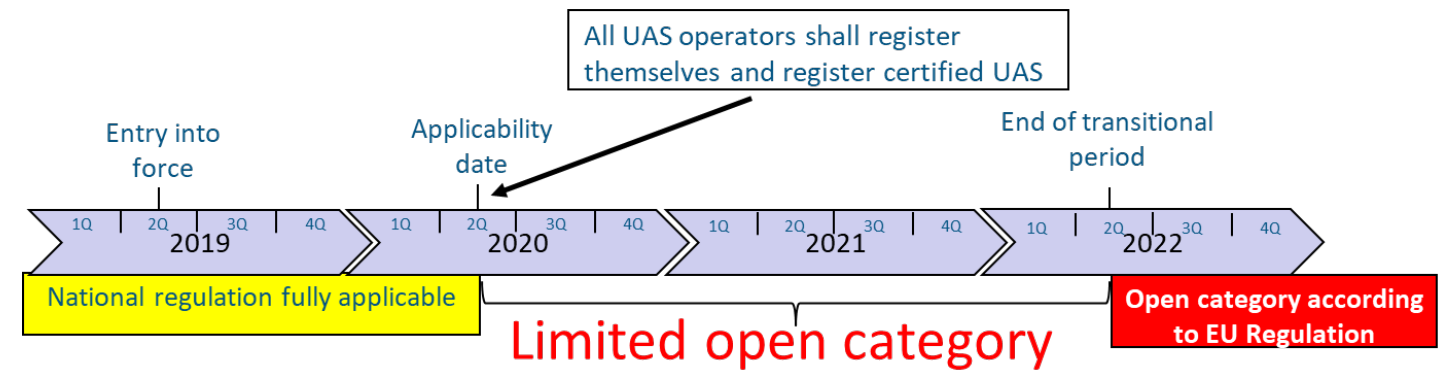


## NON-Cx-COMPLIANT drones are still allowed to be operated up to 1<sup>st</sup> of July 2022:

- In A1/C1 conditions **if MTOM < 500g** (i.s.o. 900g)  
*you cannot intentionally fly over uninvolved people*
- Keeping a safe horizontal distance of **50m** from people **if MTOM < 2kg**
- In A3 conditions **if 2kg < MTOM < 25kg**  
*fly in an area where it is reasonably expected that no uninvolved people will be endangered & keep a safe horizontal distance of 150m from residential, commercial, industrial or recreational areas*

By a remote pilot having competency level defined by MS

# Quid for my existing drone?



## NON-Cx-COMPLIANT drones are still allowed to be operated up to 1<sup>st</sup> of July 2022:

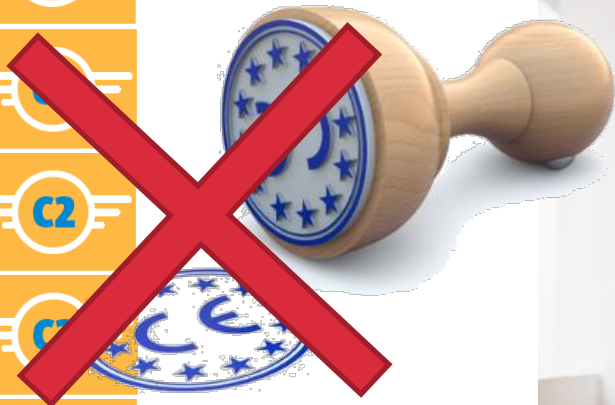
- In A1/C1 conditions **if MTOM < 500g** (i.s.o. 900g)  
*you cannot intentionally fly over uninvolved people*
- Keeping a safe horizontal distance of **50m** from people **if MTOM < 2kg**
- In A3 conditions **if 2kg < MTOM < 25kg**  
*fly in an area where it is reasonably expected that no uninvolved people will be present*  
*keep a safe horizontal distance of 150m from residential, commercial, industrial or recreational areas*

**In the true OPEN category A2 this was:**

- 30m
- 4kg

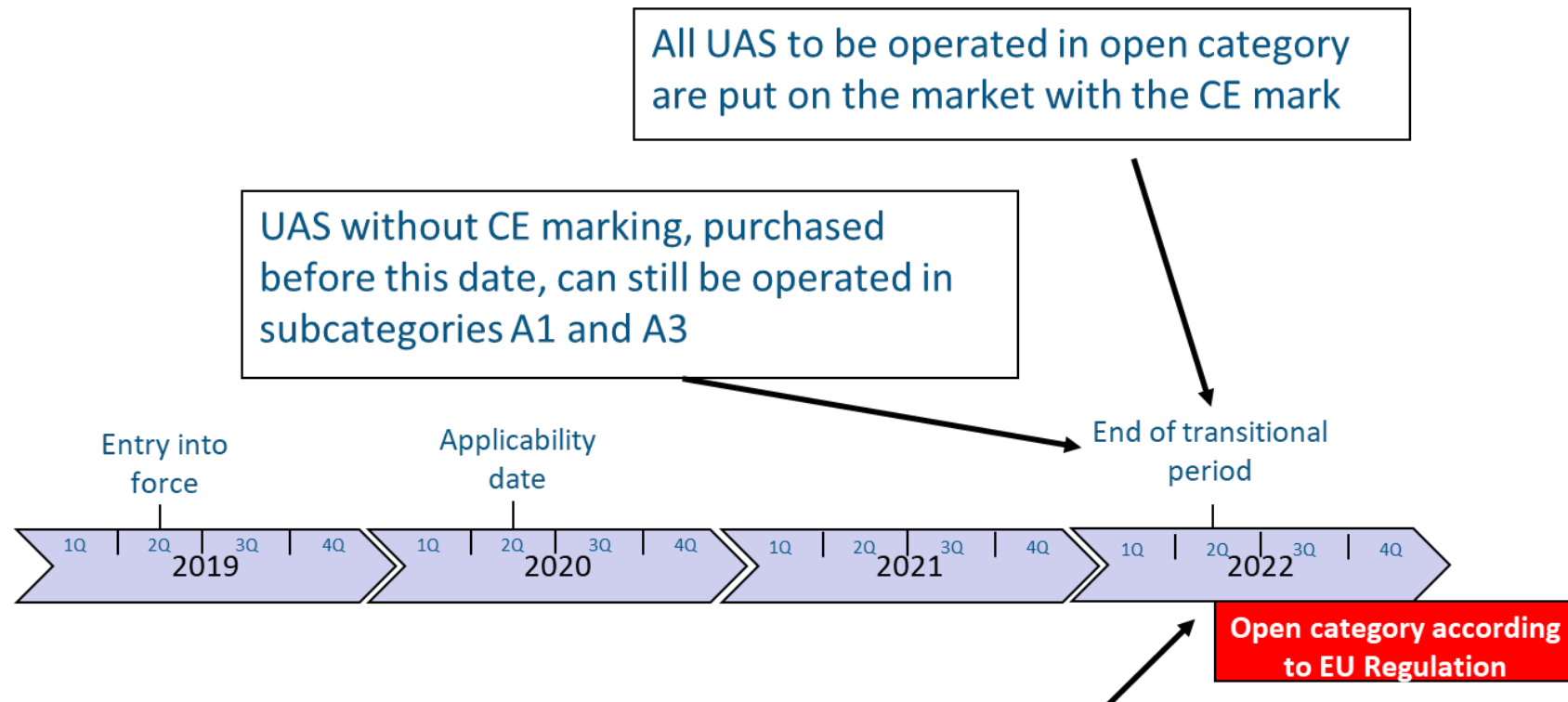
**By a remote pilot having competency level defined by MS**





What if I bought a drone (or will buy one in the future) which is *not* Cx- compliant?  
I can no longer fly in the open category after July 1st 2022?

**Answer:**  
**YES, for as long as the drone lasts**  
**but only in the ‘low risk’ A1 en A3 “Open category”**

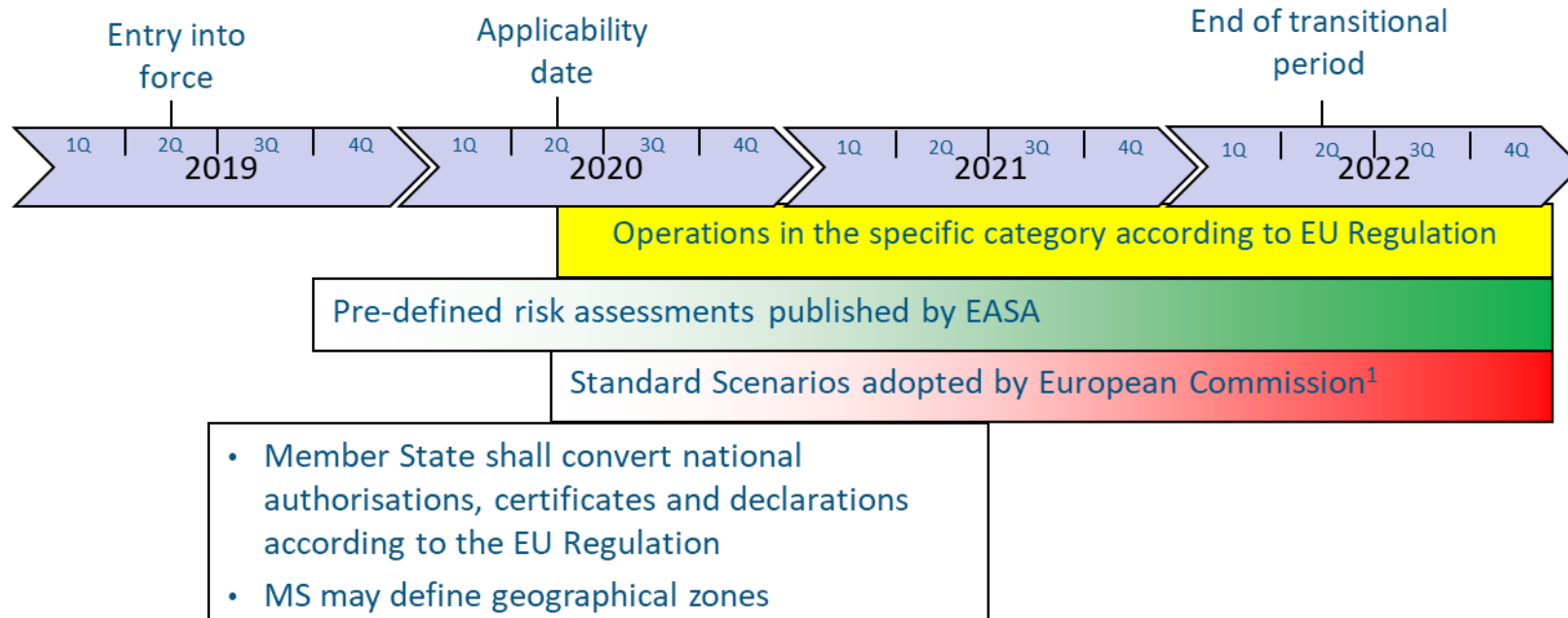


## Quid for my non-compliant existing drone?

Non-privately build NON-Cx-COMPLIANT drones are for an unlimited period still allowed to be operated, when placed on the market before 1 July 2022:

- In A1 conditions if MTOM < 250g  
*you can fly over uninvolved people*
- In A3 conditions if MTOM < 25kg  
*fly in an area where it is reasonably expected that no uninvolved people will be endangered &  
keep a safe horizontal distance of 150m from residential, commercial, industrial or recreational areas*

# Specific category & generic zoning





**What about the geographical zones?  
What about the specific category?  
What about 'converting' my current pilot license?**

# New EU legislation as from July 1<sup>st</sup> 2020

## Quid for my existing 1B declaration, 1A authorisation & derogations?

- Authorisations granted to UAS operators, certificates of remote pilot competency and declarations made by UAS operators or equivalent documentation, issued on the basis of national law, **shall remain valid until 1 July 2021**
- **By 1 July 2021 Member States shall convert** their existing certificates of remote pilot competency and their UAS operator authorisations or declarations, or equivalent documentation, including those issued until that date, in accordance with this Regulation

## OPEN A1/C1 & A3

### Pilot competencies



One can not (yet) expect that current Class2 and Class1 pilots will be exempt from all topics when doing the A1/A3 on-line test (as e.g. it covers the knowledge on the new IA and DA EU rules)

- Minimum age to be set by Member States between 12 and 16
- Familiarised with the user's manual
- On-line theoretical knowledge examination (with *Proof of completion of on-line theoretical knowledge examination*)

# OPEN A1/C1 & A3

## Pilot competencies



One can not yet expect that current Class2 and Class1 pilots will be exempt from all topics when doing the A1/A3 on-line test known as the *on-line theoretical knowledge examination* (as e.g. it covers the knowledge on the new IA and DA EU rules)

### (a) Air safety:

- (1) non-reckless behaviour, safety precautions for UAS operations and basic requirements regarding dangerous goods;
- (2) starting or stopping the operations taking into account environmental factors, UAS conditions and limitations, remote pilot limitations and human factors;
- (3) operation in visual line of sight (VLOS), which entails:
  - (i) keeping a safe distance from people, animals, property, vehicles, and other airspace users;
  - (ii) the identification of assemblies of people;
  - (iii) a code of conduct in case the UA encounters other traffic;
  - (iv) respecting the height limitation; and
  - (v) when using a UA observer, the responsibilities and communication between the UA observer and the remote pilot
- (4) familiarisation with the operating environment, in particular:
  - (i) how to perform the evaluations of the presence of uninformed person in the overflowed area as required in A1 and A3
  - (ii) informing the people involved;

### (b) Airspace restrictions: obtain and observe updated information about any flight restrictions or conditions published by the MS according to the Geo Zoning

### (c) Aviation regulations:

- (1) Introduction to EASA and the aviation system;
- (2) **Regulation (EU) 2019/945 and Regulation (EU) 2019/947:**
  - (i) their applicability to EU MSs;
  - (ii) subcategories in the 'open' category and the associated classes of UAS;
  - (iii) registration of UAS operators;
  - (iv) the responsibilities of the UAS operator;
  - (v) the responsibilities of the remote pilot; and
  - (vi) incident – accident reporting;



# OPEN A1/C1 & A3

## Pilot competencies



One can not yet expect that current Class2 and Class1 pilots will be exempt from all topics when doing the A1/A3 on-line test known as the *on-line theoretical knowledge examination* (as e.g. it covers the knowledge on the new IA and DA EU rules)

### (d) Human performance limitations:

(1) the influence of psychoactive substances or alcohol or when the remote pilot is unfit to perform their tasks due to injury, fatigue, medication, sickness,...

#### (2) human perception:

- (i) factors influencing VLOS;
- (ii) the distance of obstacles and the distance between the UA and obstacles;
- (iii) evaluation of the speed of the UA;
- (iv) evaluation of the height of the UA;
- (v) situational awareness; and
- (vi) night operations.

### (e) Operational procedures:

#### (1) pre-flight:

- (i) assessment of the area of operation and the surrounding area, including the terrain and potential obstacles and obstructions for keeping VLOS of the UA, potential overflight of uninvolved persons, and the potential overflight of critical infrastructure;
- (ii) identification of a safe area where the remote pilot can perform a practice flight;
- (iii) environmental and weather conditions (e.g. factors that can affect the performance of the UAS such as electromagnetic interference, wind, temperature, etc.); methods of obtaining weather forecasts; and
- (iv) checking the conditions of the UAS;

#### (2) in-flight:

- (i) normal procedures; and
- (ii) procedures for abnormal situations (e.g. for lost-data-link connections);

#### (3) post-flight:

- (i) maintenance; and
- (ii) logging of flight details;

# OPEN A1/C1 & A3

## Pilot competencies



One can not yet expect that current Class2 and Class1 pilots will be exempt from all topics when doing the A1/A3 on-line test known as the *on-line theoretical knowledge examination* (as e.g. it covers the knowledge on the new IA and DA EU rules)

### (f) UAS general knowledge:

- (1) basic principles of flight;
- (2) the effect of environmental conditions on the performance of the UAS;
- (3) principles of command and control:
  - (i) overview;
  - (ii) data link frequencies and spectrums; and
  - (iii) automatic flight modes, override and manual intervention;
- (4) familiarisation with the instructions provided by the user's manual of a UAS, and in particular with regard to:
  - (i) overview of the main elements of the UAS;
  - (ii) limitations (e.g. mass, speed, environmental, duration of battery, etc.);
  - (iii) controlling the UAS in all phases of flights (e.g. the take-off, hovering in mid-air, when applicable, flying basic patterns and landing);
  - (iv) features that affect the safety of flight;
  - (v) setting the parameters of the lost link procedures;
  - (vi) setting the maximum height;
  - (vii) procedures to load geographical zone data into the geo-awareness system;
  - (viii) procedures to load the UAS operator registration number into the direct remote identification system;
  - (ix) safety considerations:
    - (A) instructions to secure the payload;
    - (B) precautions to avoid injuries from rotors and sharp edges; and
    - (C) the safe handling of batteries;
  - (x) Maintenance instructions:

### (g) Privacy and data protection:

- (1) understanding the risk posed to privacy and data protection; and
- (2) the guiding principles for data protection under the GDPR3;

# OPEN A1/C1 & A3

## Pilot competencies



One can not yet expect that current Class2 and Class1 pilots will be exempt from all topics when doing the A1/A3 on-line test known as the *on-line theoretical knowledge examination* (as e.g. it covers the knowledge on the new IA and DA EU rules)

(h) Insurance:

- (1) liability in case of an accident or incident;
- (2) general knowledge of the EU regulations; and
- (3) awareness of the possible different national requirements for insurance in the MSs.

(i) Security:

- (1) an understanding of the security risk;
- (2) an overview of the EU regulations;
- (3) awareness of the possible different national requirements for security in the MSs.

# OPEN A2

## Pilot competencies



One can expect that current Class2 and Class1 pilots can truthfully declare practical self-training

- Minimum age to be set by Member States between 12 and 16
- Familiarised with the user's manual
- Hold a certificate of remote pilot competency after:
  - Online examination (idem as for cat A1/C1)
  - Declaring practical self-training
  - Additional cat A2 theoretical knowledge examination (in classroom, with *Certificate of remote pilot competency*)

*The practical self-training should contain at least flying exercises regarding take-off or launch and landing or recovery, precision flight manoeuvres remaining in a given airspace volume, hovering in all orientations or loitering around positions when applicable. In addition, the remote pilot should exercise procedures for abnormal situations (e.g. a return-to-home function, if available), as stipulated in the user's manual provided by the manufacturer.*

# OPEN A2

## Pilot competencies



One can expect that current Class2 and Class1 pilots will be exempt from the Add. Theor. Ex.

- Minimum age to be set by Member States between 12 and 16
- Familiarised with the user's manual
- Hold a certificate of remote pilot competency after:
  - Online examination (idem as for cat A1/C1)
  - Declaring practical self-training
  - Additional cat A2 theoretical knowledge examination (in classroom, with *Certificate of remote pilot competency*)

- (1) meteorology:
  - (i) the effect of weather on the UA: wind, temperature, visibility, air-density
  - (ii) obtaining weather forecasts;
- (2) UAS flight performance:
  - (i) the typical operational envelope of a rotorcraft, for fixed wing and hybrid configurations;
  - (ii) mass and balance, and centre of gravity (CG):
    - (A) consider the overall balance when attaching gimbals, payloads;
    - (B) understand that payloads can have different characteristics
    - (C) understand that each different type of UA has a different CG;
  - (iii) secure the payload;
  - (iv) batteries:
    - (A) understand the power source to help prevent potential unsafe conditions;
    - (B) familiarise with the existing different kinds of battery types;
    - (C) understand the terminology used for batteries (e.g. memory effect, capacity, c-rate); and
    - (D) understand how a battery functions (e.g. charging, usage, danger, storage); and
- (3) technical and operational mitigations for ground risk:
  - (i) low-speed mode functions;
  - (ii) evaluating the distance from people

# OPEN A2

## Pilot competencies



One can expect that current Class2 and Class1 pilots will be exempt from the Add. Theor. Ex.

- Minimum age to be set by Member States between 12 and 16
- Familiarised with the user's manual
- Hold a certificate of remote pilot competency after:
  - Online examination (idem as for cat A1/C1)
  - Declaring practical self-training
  - Additional cat A2 theoretical knowledge (in classroom, with Cert. of competency)

- (1) meteorology:
  - (i) the effect of weather on the UA: wind, temperature, visibility, air-density
  - (ii) obtaining weather forecasts
- (2) UAS flight performance:
  - (i) the effect of weight and CG of a rotorcraft, for fixed wing and hybrid aircraft
  - (ii) the effect of weight and gravity (CG):
    - (A) when attaching gimbals, payloads; have different characteristics
    - (B) type of UA has a different CG;
  - (iii) the effect of power source to help prevent potential unsafe situations;
    - (A) understand the terminology used for batteries (e.g. memory effect, capacity, c-rate); and
    - (B) familiarise with the existing different kinds of battery types;
    - (C) understand the terminology used for batteries (e.g. memory effect, capacity, c-rate); and
    - (D) understand how a battery functions (e.g. charging, usage, danger, storage); and
- (3) technical and operational mitigations for ground risk:
  - (i) low-speed mode functions;
  - (ii) evaluating the distance from people

Training can be self-study.  
Examination is not on-line but in classroom.

**SPECIFIC**  
INCREASED RISK

**Pilot competency:**



**Assesment to be made on current Class2 and Class1 pilots**

**Operational authorisation required before flight,  
granting by CA based on SORA**

**OR**

**Declaration suffices if standard scenario  
is respected**

*The UAS operator may propose to the NAA, as part of the application for an operational authorisation, a theoretical knowledge training course for the remote pilot based on the **OPEN category A2 competencies complemented by the following subjects:***

*air safety, aviation regulations, navigation, human performance limitations, operational procedures, UAS general knowledge, meteorology, emergency response plan (ERP), and any other topic deemed relevant based on the characteristics of the operation (e.g. multi-crew)*

*When the UAS operation is conducted according to a STS the UAS operator must ensure that the remote pilot has the **competencies defined in the STS***



What about model aircraft?



# Definitions

UAS

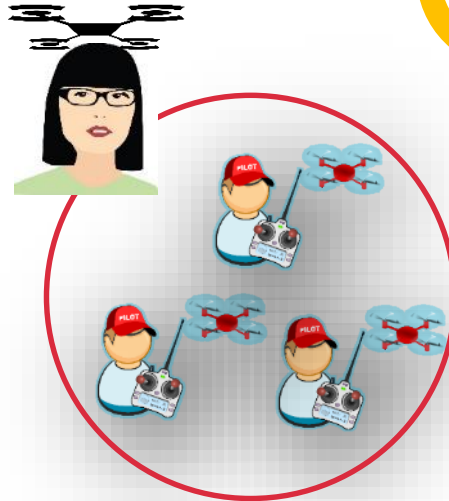


Model aircraft = UAS



However special provisions apply

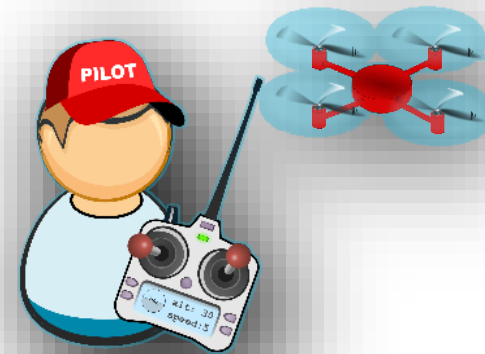
UAS Operato



Involved person



Remote pilot



# Model aircraft

## Option 1

- Model clubs and associations may receive an authorisation from the NAA defining the applicable conditions (i.e. NAA may define the full set of rules such as minimum age, maximum altitude etc..). Registration still mandatory for the members but the club can do so on their behalf.
- All members of an authorised model club or association must operate according to the procedures of the club or association

## Option 2

Fly in areas designated by the NAA where different conditions apply



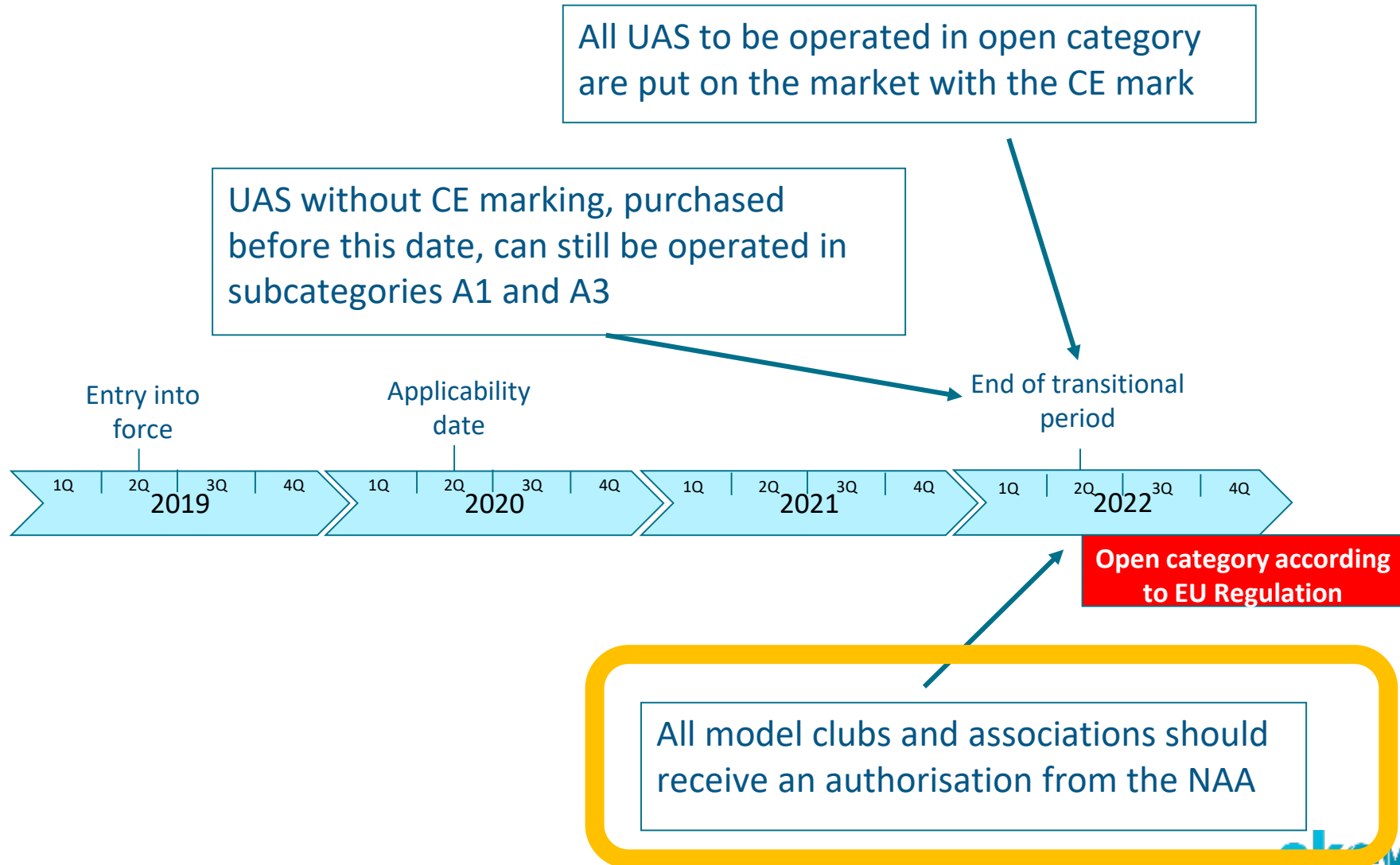
## Option 3

Fly in subcategory A3



Privately built with  
MTOM < 25kg

# Expected Timeline





## What's all about those "Joules"?

$$E_k = \frac{mv^2}{2}$$

$$E_p = mgh$$

$$v = \frac{s}{t}$$

$$s = vt^2$$





$$E_k = \frac{mv^2}{2}$$

$$E_p = mgh$$

$$v = \sqrt{2s}$$

$$v = \sqrt{2s}$$

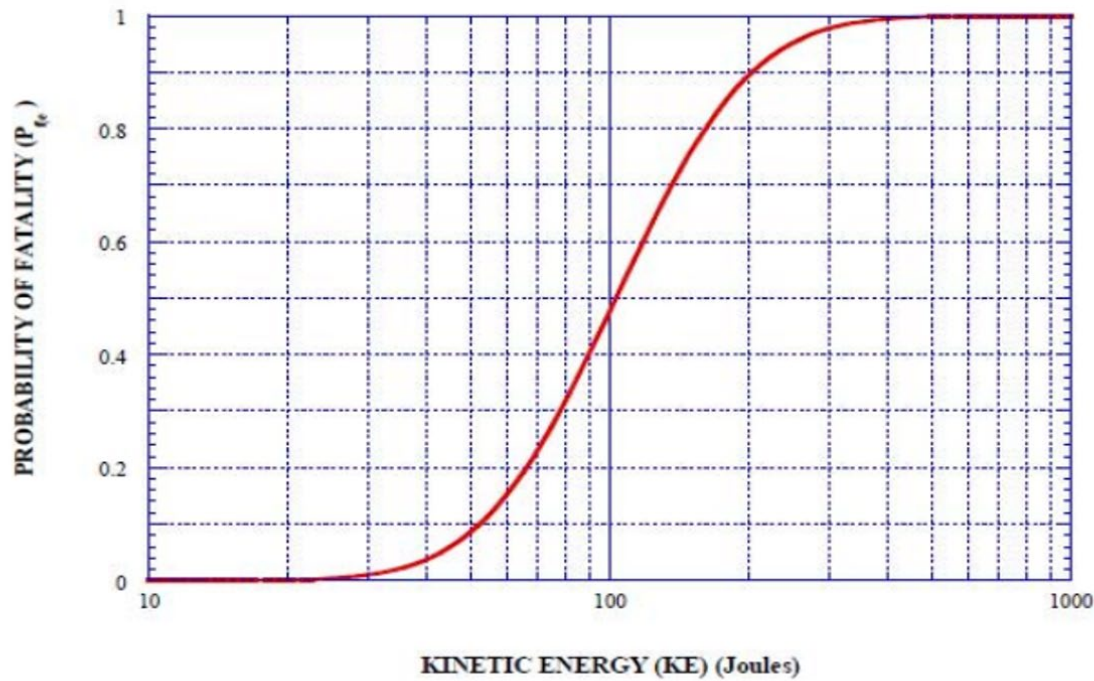


## What's all about those "Joules"?

Border between  
Open A1 'Fly over people'  
And  
Open A2 'Fly close to people'  
is set at  
**80J at terminal velocity** of the drone

# How about 80J?

m	v (m/s)	km/h	$mv^2/2$ (J)	h
0,43	22	79,2	104	25
0,73	34	122,4	422	59



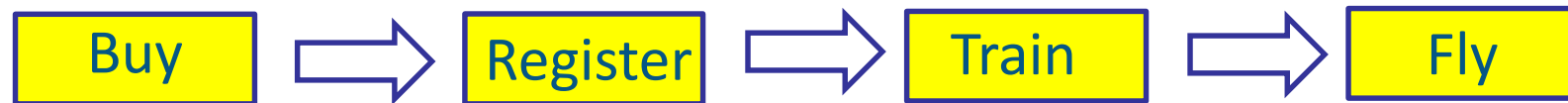
LETHALITY CRITERIA FOR DEBRIS GENERATED FROM ACCIDENTAL EXPLOSIONS





# Summary on IA and DA

- New EU Regulation will start to apply from mid 2020 and become fully applicable in mid 2022
- Registration of UAS operator and certified UAS
- Open category:



- Specific category:



- Be aware of all risks and do not pose an unnecessary risk to third parties on the ground or in the air
- Be respectful of privacy and other peoples' rights

# AGENDA

- Current KB
- EU rules background
- EU Delegated Act
- EU Implementing ACT
  - OPEN CATEGORY
  - SPECIFIC CATEGORY
  - CERTIFIED CATEGORY
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  - Opinion on STS
  - Draft U-space regulation
- 'State aircraft' rules
- Droneguide session





## Overview acts

Political agreement between Commission, Council and Parliament on new Basic Regulation

- **Implementing act (IA)**

Requirements related to operation and registration

- **Delegated act (DA)**

Requirements related to CE marking, technical requirements, maintenance of UAS and third-country operators

## What's coming

Guidance material and AMCs on the current IA and DA have already been published and reflected in this presentation

Opinion No 05/2019 has been issued by EASA towards the EC:

- Proposed amendments to the body of the text and the Annexes of both the IA and DA
- Filling out an originally blank Appendix 1 to IA with description of “Standard scenarios”
- Creation of 4 new Appendixes 2 to 5, incl e.g. required content of Operations Manual (only relevant for Specific category)

ew Basic

# AGENDA

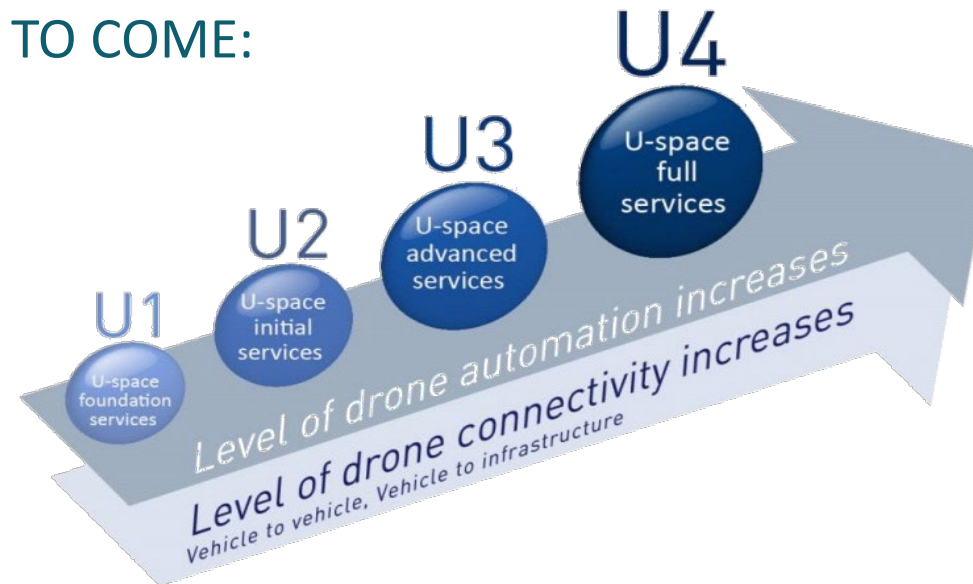
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## U-space regulation

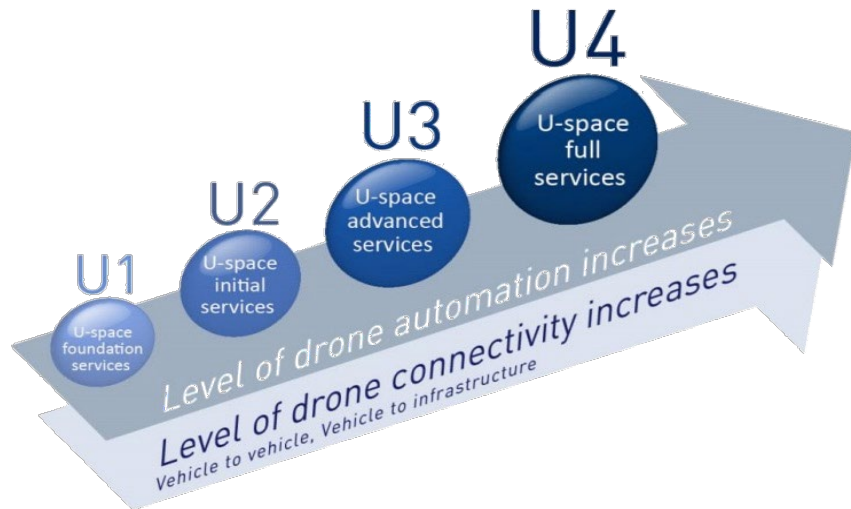
- The IA defines the rules the operator and the pilot should adhere to, e.g. in terms of prior (strategic) operational authorisation.
- Specific pre-tactical authorisation is (only) required if an operation in the SPECIFIC category is conducted in controlled airspace or if the geographical zone so dictates
- General rule applies: manned has priority over unmanned and its the drone pilots responsibility to keep away from any form of manned aviation

BUT THERE IS FAR MORE TO COME:



# U-space regulation

Every operator will have to become customer of a **U-space Service Provider (USP)** of choice, in an open competitive market.



## U1:

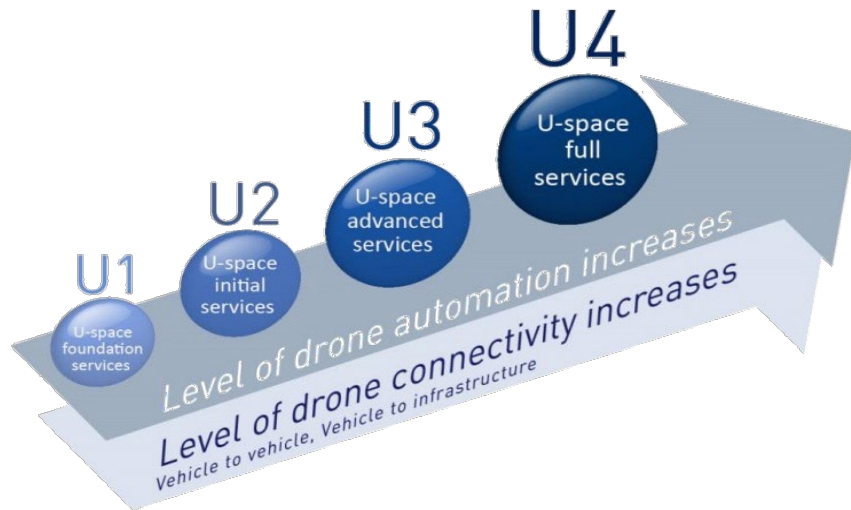
- E-registration
- E-identification

## U2:

- Flight planning
- Flight approval
- Tracking
- Airspace dynamic information

# U-space regulation

Every operator will have to become customer of a **U-space Service Provider (USP)** of choice, in an open competitive market.



## U1:

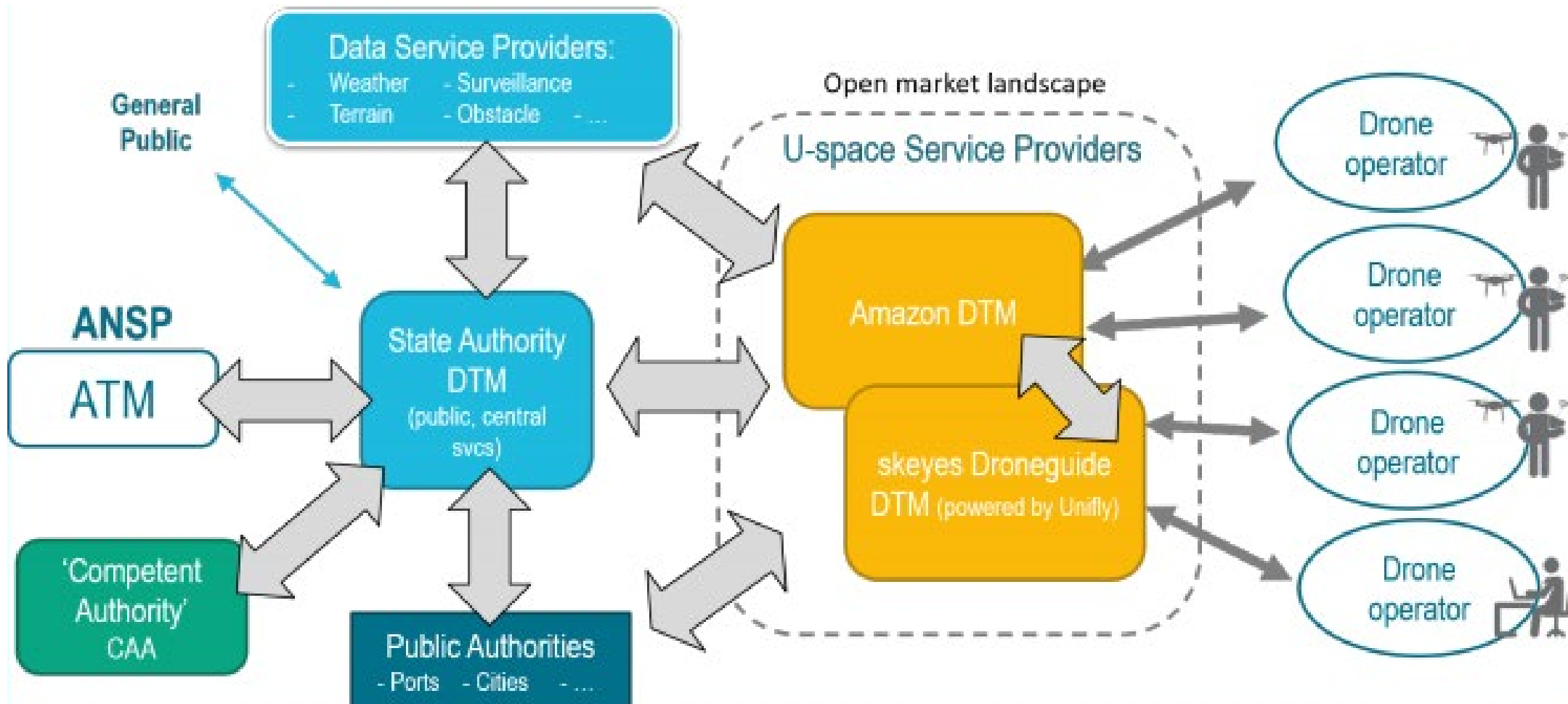
- E-registration
- E-identification

## U2:

- Flight planning
- Flight approval
- Tracking
- Airspace dynamic information

Implementation as  
new EU IA before  
end of 2021

# U-space regulation: SAFIR test, architecture overview



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## Excluded from the drone KB:

- “de RPA die ingezet worden voor militaire, douane-, politie-, opsporings- en reddings-, brandbestrijdings-, kustbewakings- of soortgelijke operaties of vergelijkbare activiteiten.”
- SERA reference (Art 4):  
activities of public interest and for the training necessary to carry out the activities safely:
  - (a) police and customs missions;
  - (b) traffic surveillance and pursuit missions;
  - (c) environmental control missions conducted by, or on behalf of public authorities;
  - (d) search and rescue;
  - (e) medical flights;
  - (f) evacuations;
  - (g) fire fighting;
  - (h) exemptions required to ensure the security of flights by heads of State, Ministers and comparable State functionaries

## Excluded from the drone KB:

Are pulled out of the void by the Belgian Ministry of Interior through issuing a “Ministerial Circulaire”, *revised in July this year*

### Civiele staatsoperatoren:

Politiediensten,  
Brandweerdiensten  
en Diensten van de civiele bescherming

(other services remain for time being excluded from the KB and carry out operations fully under their own responsibility)

## Belangrijkste punten

- Deze omzendbrief is van toepassing op een RPA ingezet voor operaties van politie, brandweer of operationele eenheden van de civiele bescherming die **in het algemeen belang** worden verricht door de civiele staatsoperatoren of door exploitanten in naam van de civiele staatsoperatoren.
- BLOS-operaties mogen slechts plaatsvinden indien de **bestuurder van het RPA** beschikt over de kwalificatie BLOS (uitgereikt door een **civiele staatsoperator aan zijn personeelsleden** op basis van een erkende opleiding) en indien de RPA is uitgerust met technische hulpmiddelen die de piloot toelaten een beeld te vormen van de positie en de omgeving van het RPA.
- Zowel voor zichtbereikvluchten (VLOS) als vluchten buiten het zichtbereik (BLOS) zijn de vluchtuitvoeringen met een RPAS **beperkt tot een hoogte van 300 voet** AGL in zowel niet-gecontroleerd als gecontroleerd luchtruim. **In gecontroleerd luchtruim zijn vluchten hoger dan 300 voet AGL uitzonderlijk mogelijk** mits specifieke toestemming door de bevoegde luchtverkeersleiding.

# Overzicht operationele vlucht voorwaarden drones

	Klasse 2 5kg/150ft/VLOS	Klasse 1B 150kg/300ft/VLOS	Klasse 1A 150kg/300ft/VLOS	State aircraft 150kg/VLOS/BVLOS
<b>Ongecontroleerd luchtruim</b>		DGLV notificatie	DGLV notificatie	Max 300ft, geen notificatie
<b>1.5N / 0.5 NM luchtvaarterrein</b>	Mits lokaal akkoord	Mits lokaal akkoord + DGLV notificatie	Mits lokaal akkoord + DGLV notificatie	Mits lokaal akkoord, max 300ft
<b>P/D/R</b>	Altijd no-fly	Altijd no-fly	Mits derogatie+ DGLV notificatie	Altijd no-fly
<b>LFA/HTA</b>	Altijd no-fly	Altijd no-fly	Mits derogatie+ DGLV notificatie + mil ATS clearance	Mits clearance military ATS, max 90m
<b>TRA/TSA</b>	Altijd no-fly	Altijd no-fly, tenzij aangemaakt voor RPAS vlucht + DGLV notificatie	Mits derogatie, tenzij aangemaakt voor RPAS vlucht + DGLV notificatie	Altijd no-fly, tenzij aangemaakt voor RPAS vlucht, max 90m
<b>CTR</b>	Altijd no-fly	Altijd no-fly	Mits derogatie + DGLV notificatie + ATS clearance	ATS clearance, geen max hoogte

# Belangrijkste punten

- In CTR (civiel of militair):
  - VLOS of BVLOS vluchten beperkt binnen een straal van max. 500m:
    - De bevoegde luchtverkeersleiding wordt tenminste 30 minuten voorafgaand aan de vlucht telefonisch gecontacteerd. In geval van spoedeisende gebeurtenissen kan onmiddellijk contact worden opgenomen.
    - De vlucht kan aanvangen mits **voorafgaand akkoord van de bevoegde luchtverkeersleiding** die uit veiligheidsoverwegingen bijkomende te volgen instructies kan uitvaardigen.
    - Op elk moment dient elke instructie van de bevoegde luchtverkeersleiding onmiddellijk opgevolgd te worden, inclusief eventuele instructie om de vlucht onmiddellijk te beëindigen.
    - Aan het einde van de vlucht dient de bevoegde luchtverkeersleiding gecontacteerd te worden om melding te maken van de beëindiging van de vlucht.
    - de bestuurder van de RPA **dient tijdens de gehele vlucht te worden bijgestaan door een RPA-waarnemer** die zich in de onmiddellijke nabijheid van de bestuurder van de RPA bevindt en **in staat voor de communicatie** met de bevoegde luchtverkeersleiding
    - vluchten mogen enkel worden uitgevoerd met een **gehomologeerde RPAS**
  - ‘buiten het zichtbereik (BLOS)’ waarvan het vluchtbereik NIET beperkt wordt tot een straal van maximum 500m rond een niet bewegende bestuurder van de RPA
    - **toegelaten** mits het respecteren van een specifieke procedure opgemaakt in overleg met en gevalideerd door de bevoegde luchtverkeersleiding

## Belangrijkste punten

- de bestuurder is houder van een geldig ***bewijs van bevoegdheid*** als bestuurder van een RPA of van een ***brevet van bestuurder van een RPA uitgereikt door een civiele staatsoperator***
- Indien het een vluchtuitvoering betreft door een ***exploitant\****, of met een gehuurde of ter beschikking gestelde RPA, moet bovendien:
  - voorafgaandelijk een overeenkomst afgesloten worden met de bepalingen betreffende de gevraagde operaties ***overeenkomstig de risicoanalyse en het operationeel handboek***, het beroepsgeheim, het gebruik van beelden, de piloten die gemachtigd zijn het toestel te bedienen en de verzekering burgerlijke aansprakelijkheid voor zowel het RPA, de piloten als de andere personen betrokken bij de vluchtoperatie.
  - voor elke individuele vluchtoperatie de exploitant beschikken over een ***schriftelijke opdracht van de civiele staatsoperator***, dat tenminste de naam van de exploitant, de opdrachtgever, en de datum en plaats van de vluchtuitvoering vermeldt.

***\*exploitant*** : een natuurlijke of rechtspersoon die beschikt over een klasse 1A toelating uitgevaardigd door het DGLV maar die zelf geen civiele staatsoperator is

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**THANKS**

member of FABEC

**skeyes** nice to  
guide  
you



# ADDITIONAL BACK-UP SLIDES