

DRONE
PORT
CAFE



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

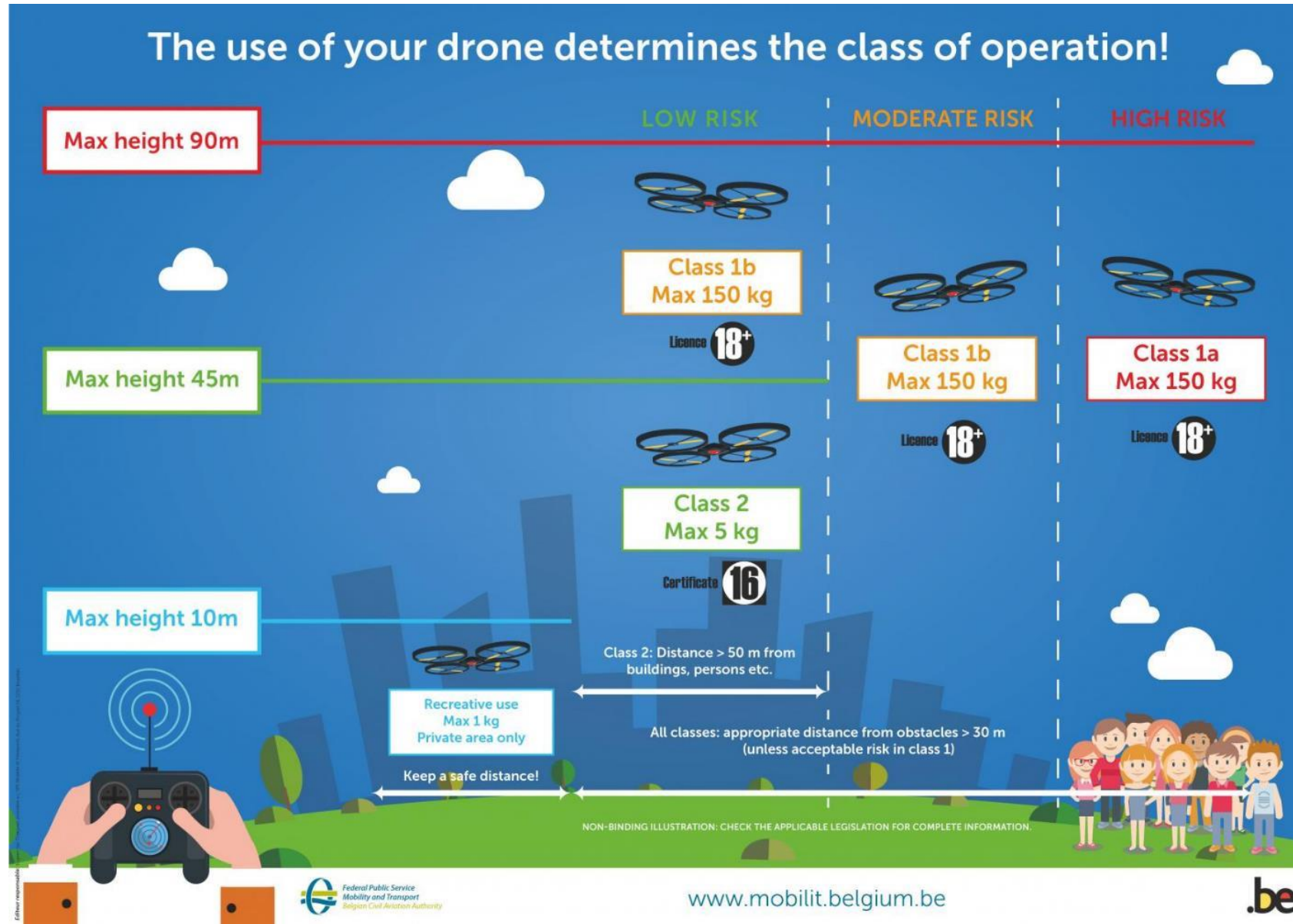
25 juni 2019

Jean-Pierre De Muyt

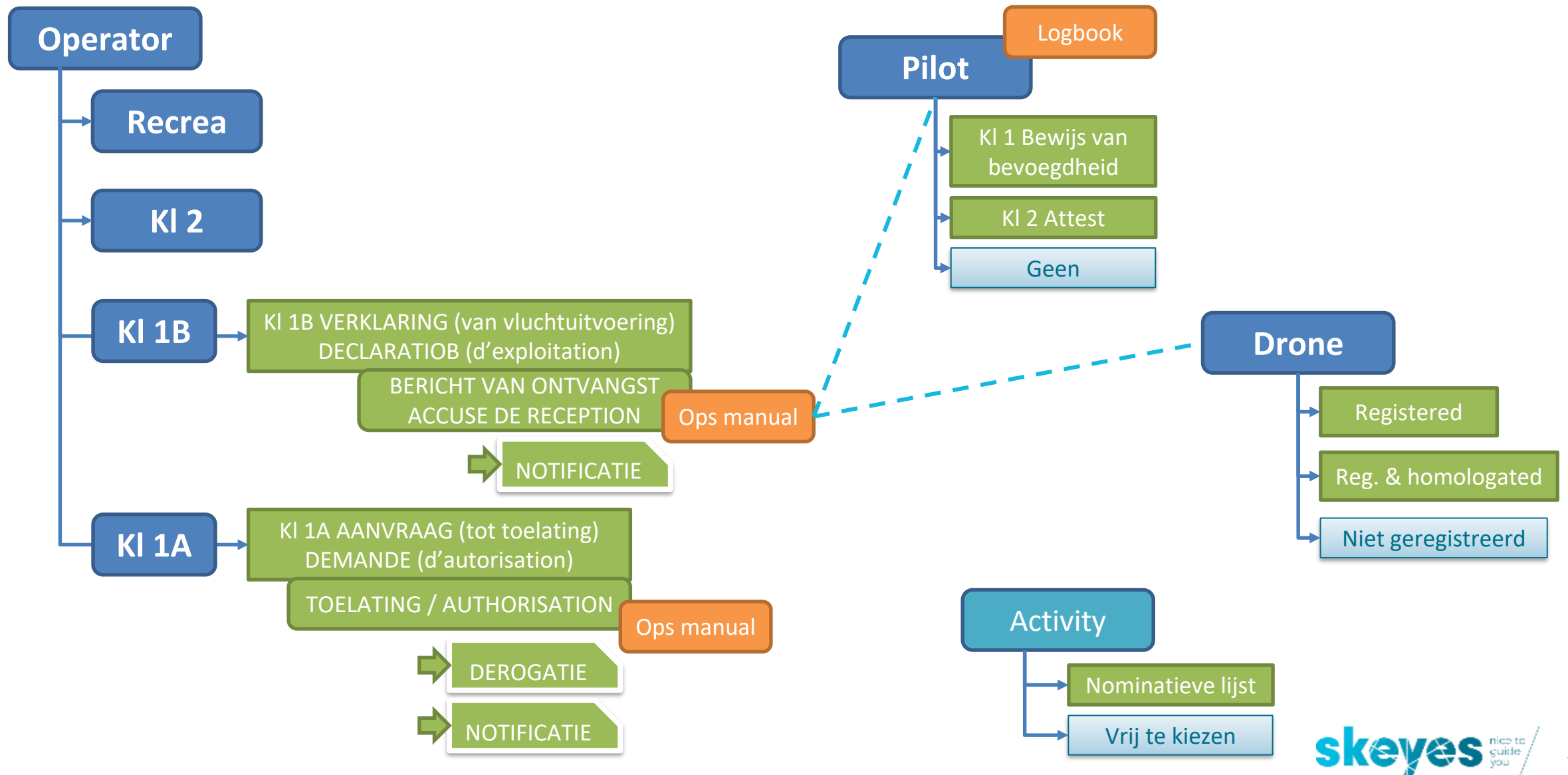
member of FABEC

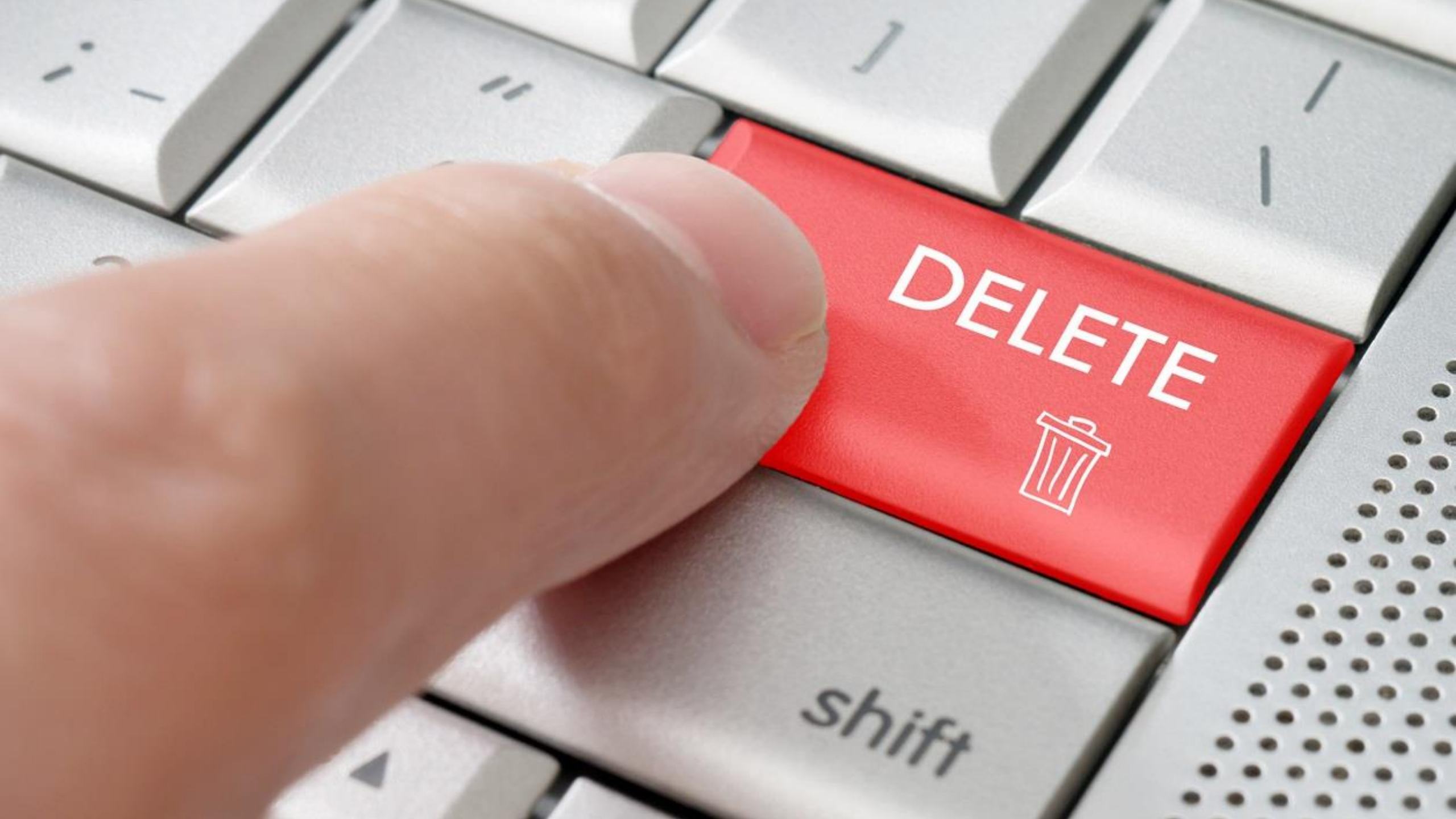


The current regulatory landscape



The current regulatory landscape





New legal basis



Regulation EU 1139/2018 (EASA basic regulation) extends the EU competence to all UAS

Only civil drones but possibility to opt in for state and military aircraft



Delegated act

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

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



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

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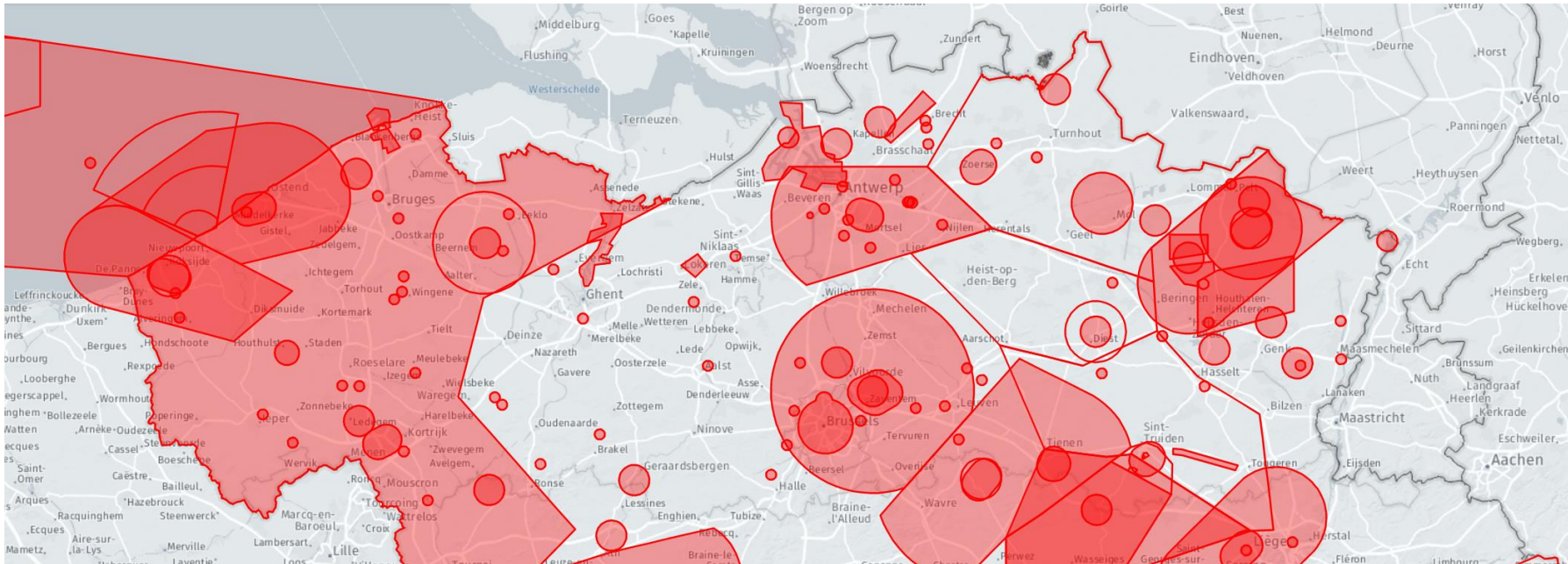
Remote ID real-time broadcast (open cat)

- UAS operator registration nr
- 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



Implementing Act

New EU legislation as from July 1st 2020

New EU legislation as from July 1st 2020



OPEN



SPECIFIC



CERTIFIED

New EU legislation as from July 1st 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 1st 2020



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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 1st 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

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New EU legislation as from July 1st 2020



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VLOS, 25kg MTOM, 120m AGL



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Licensed pilot

New EU legislation as from July 1st 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 1st 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 1st 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 1st 2020

OPEN A1/C0

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



C0

'Toy drone'

<250g

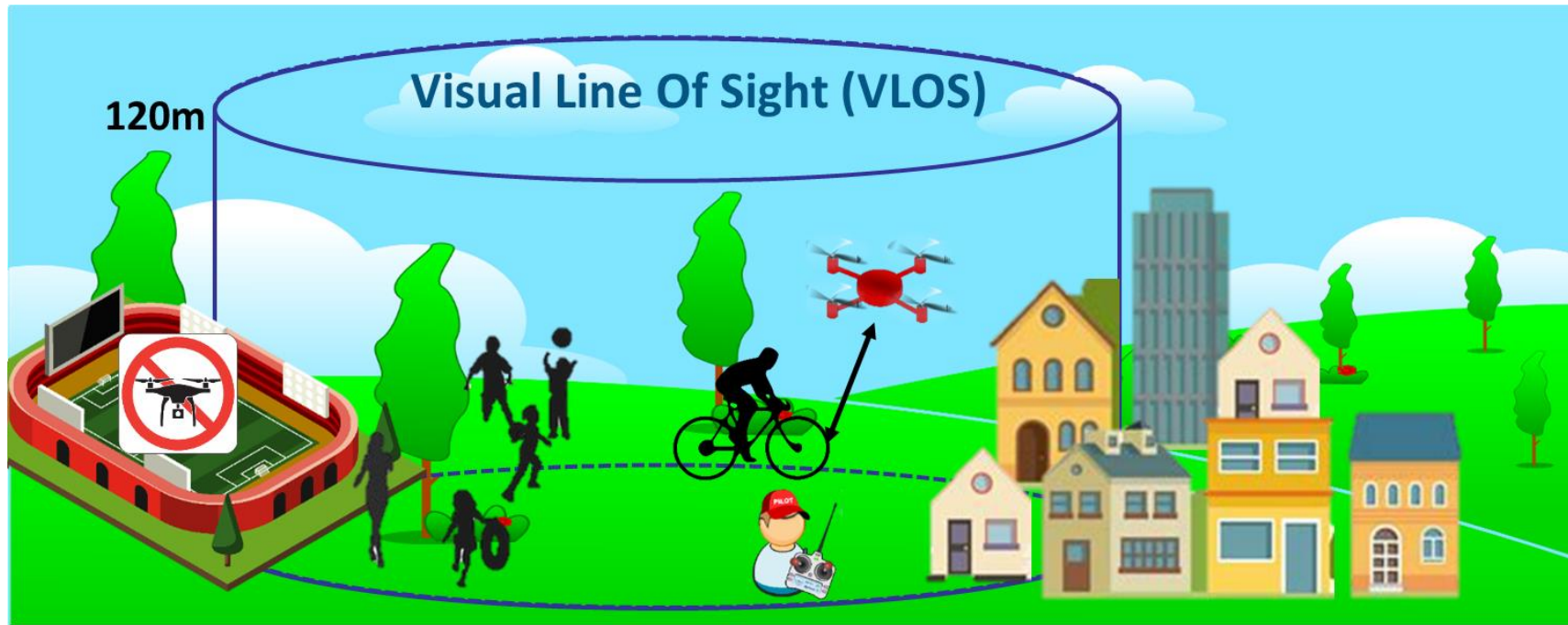
or

Privately build <250g

New EU legislation as from July 1st 2020

OPEN A1/C1

- You cannot intentionally fly over uninvolved people
- No flying over assemblies of people



C1

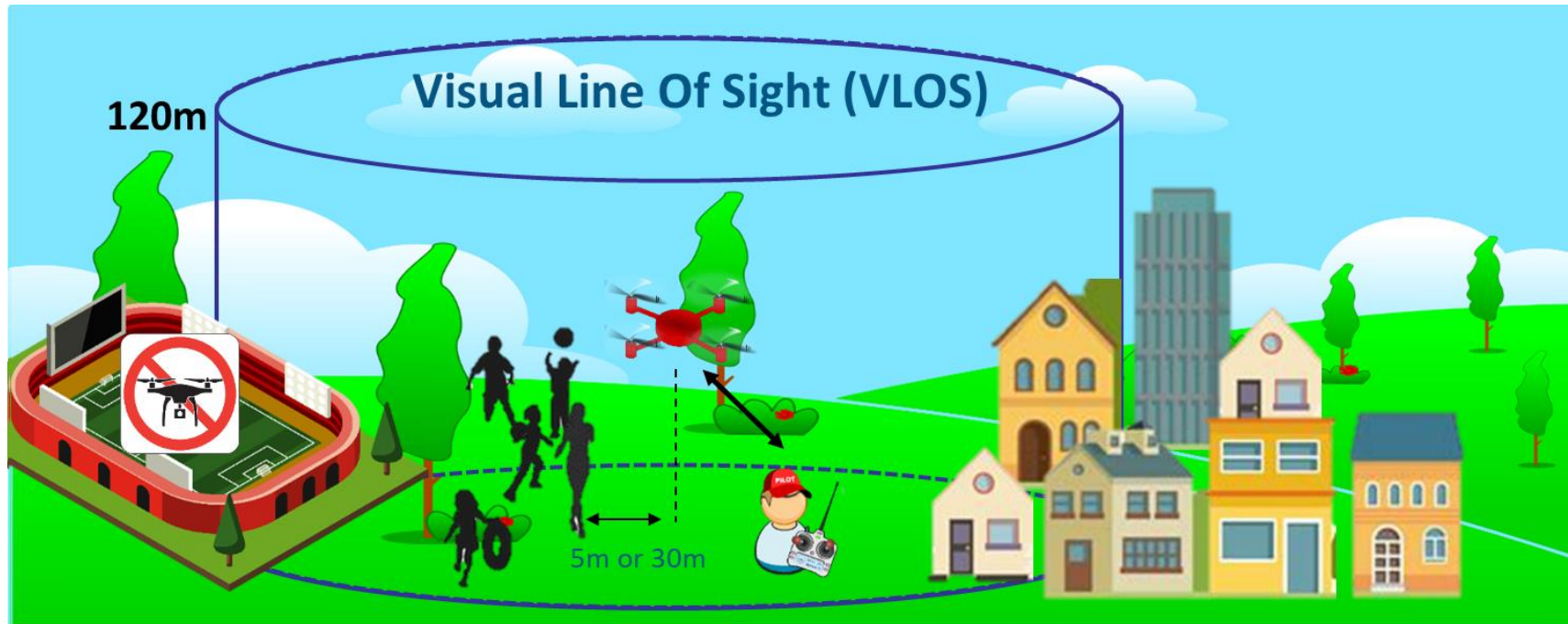
'Hobby drone'

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

New EU legislation as from July 1st 2020

OPEN A2

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



C2

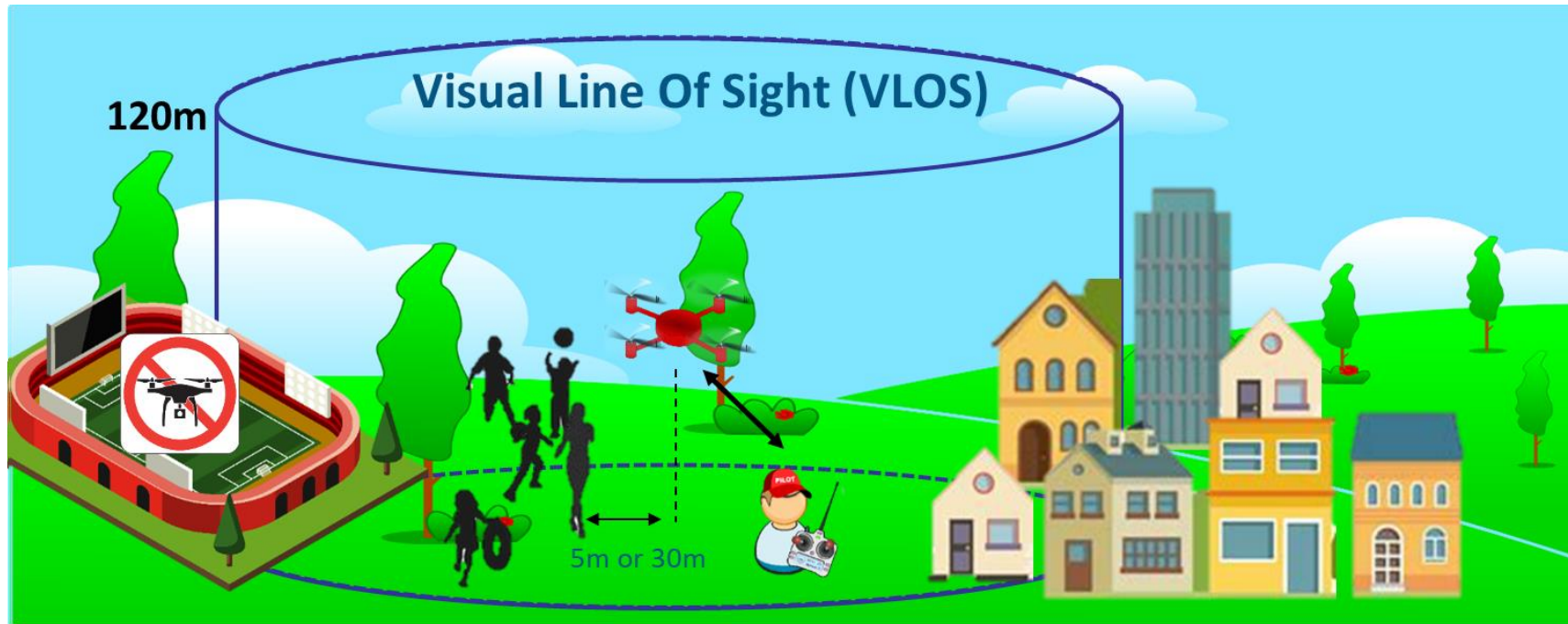
'Prosumer
drone'

<4kg

New EU legislation as from July 1st 2020

OPEN A2

- **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

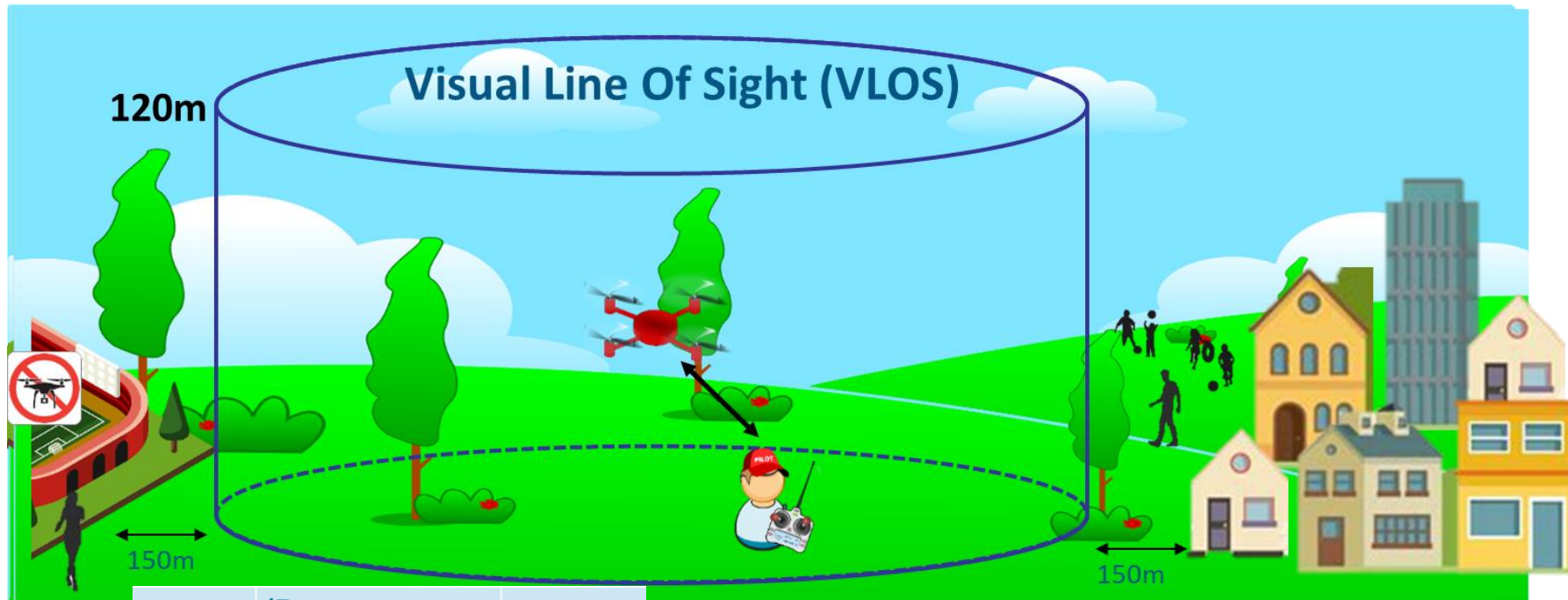
'Prosumer
drone'

<4kg

New EU legislation as from July 1st 2020

OPEN A3

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



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

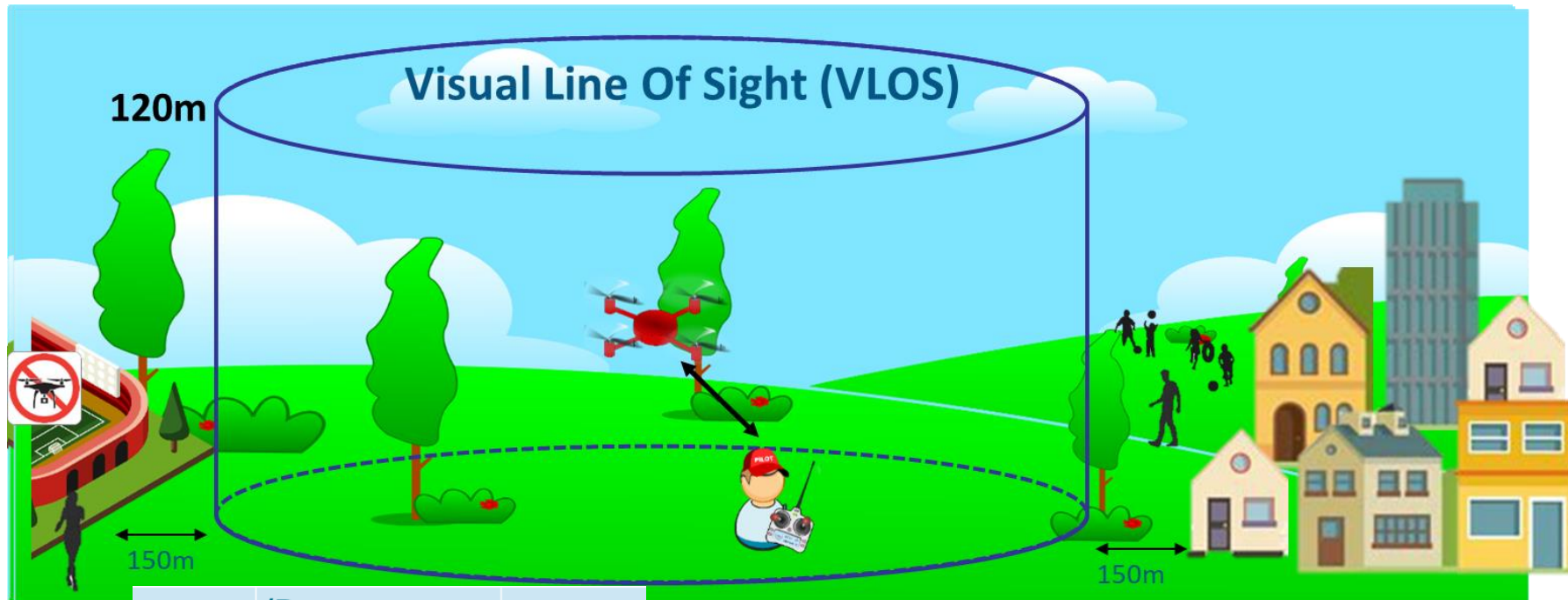
or

Privately build <25kg

New EU legislation as from July 1st 2020

OPEN A3

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



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

or

Privately build <25kg

New EU legislation as from July 1st 2020

OPEN

LOW RISK

No authorisation or
declaration

Pilot responsibility:

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



New EU legislation as from July 1st 2020

OPEN

Table made available for ease of overview

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 (J)	Main technical requirements (CE marking)	Electronic ID/ geo awareness	
A1 <i>Fly over people</i>	You can fly over uninvolved people (not over assemblies)	<ul style="list-style-type: none">No minimum ageFamiliarised with the user's manual	Privately build	< 250g	Max speed 19m/s	No	No, for as long as not equipped with a sensor able to capture personal data <div>250g or 80J impact</div>
	You cannot intentionally fly over uninvolved people	<ul style="list-style-type: none">Minimum age to be set by Member States between 12 and 16Familiarised with the user's manualOnline trainingOnline test	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		
A2 <i>Fly close to people</i>	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">Minimum age to be set by Member States between 12 and 16Familiarised with the user's manualHold a certificate of remote pilot competency after:<ul style="list-style-type: none">Online training (idem as for cat A1/C1)Online test (idem as for cat A1/C1)Declaring practical self-trainingAdditional cat A2 theoretical knowledge examination	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 <i>Fly far from people</i>	You should: <ul style="list-style-type: none">fly in an area where it is reasonably expected that no uninvolved people will be endangeredkeep a safe horizontal distance of 150m from residential, commercial, industrial or recreational areas	<ul style="list-style-type: none">Minimum age to be set by Member States between 12 and 16Online training (idem as for cat A1/C1)Online test (idem 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	if required by zone of operations	
			C4 (aero-model)	< 25kg	No automatic flight, lost-link management		
						Privately build	

*: 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

IDM0625

New EU legislation as from July 1st 2020

OPEN A1

Pilot competencies

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

New EU legislation as from July 1st 2020

OPEN A2

Pilot competencies

Operation		Remote pilot competency	UAS	
Sub-cat.	Area of operation		class	MTOM/ Joule (J)
A2 <i>Fly close to people</i>	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">• 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:<ul style="list-style-type: none">• Online training (idem as for cat A1/C1)• Online test (idem as for cat A1/C1)• Declaring practical self-training• Additional cat A2 theoretical knowledge examination	C2 (prosumer drone)	< 4kg

New EU legislation as from July 1st 2020

OPEN A3

Pilot competencies

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

New EU legislation as from July 1st 2020

OPEN A3

Pilot competencies

Operation		Remote pilot		
Sub-cat.	Area of operation		Class	MTOM/ Joule (J)
A3 <i>Fly far from people</i>	You should: <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Minimum age to be set by Member States between 12 and 16 Familiarised with the user's manual Online training (idem as for cat A1/C1) Online test with proof of completion (idem as for cat A1/C1) 	C2 (prosumer drone)	< 4kg
			C3 (professional)	< 25kg and < 3m in size
			C4 (aero-model)	< 25kg
			Privately build	

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

New EU legislation as from July 1st 2020

CERTIFIED
RISK AS MANNED
AVIATION

New EU legislation as from July 1st 2020

CERTIFIED
RISK AS MANNED
AVIATION

UAS:

Certified because of:

- Characteristic dimension >3m and is designed to be operated over assemblies of people
- Is designed for transporting people
- Is designed for transport of dangerous goods, requiring high level of robustness to mitigate risk

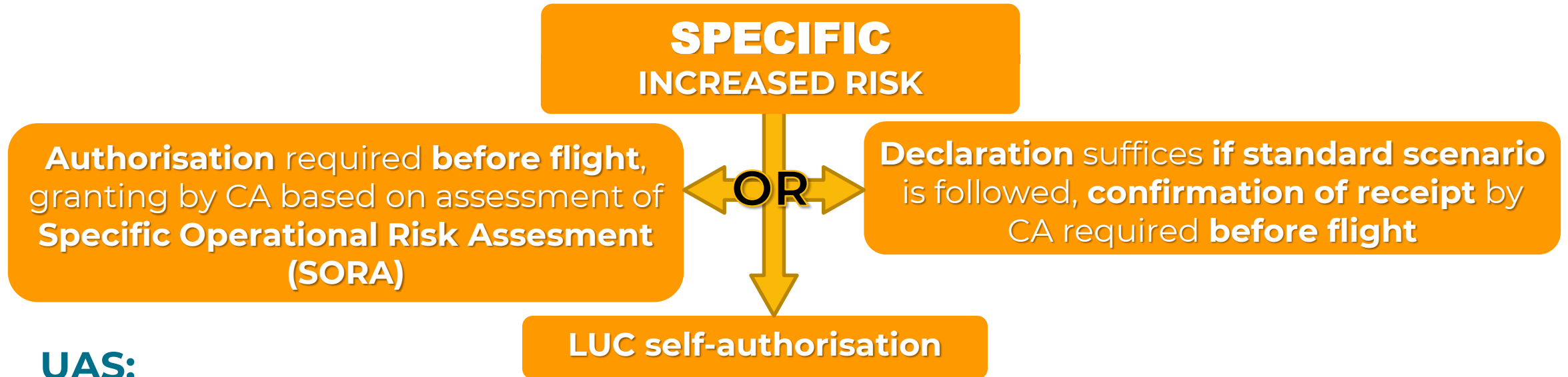
Operation:

- Is conducted in following conditions:
 - **over assemblies of people**
 - **involves transport of people**
 - **Is designed for transport of dangerous goods, resulting in high risk**
- 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 1st 2020

**SPECIFIC
INCREASED RISK**

New EU legislation as from July 1st 2020



UAS:

Any UAS

Operation:

- Any operation which is not 'Open' nor 'Certified'
- Registration of operator
- Operational conditions defined in either the authorisation or the standard scenario
- Rules of the air apply

New EU legislation as from July 1st 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 1st 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 1st 2020

Specific authorisation:

- SORA based risk analysis

SPECIFIC
INCREASED RISK

New EU legislation

Specific authorisation:

- SORA based risk analysis

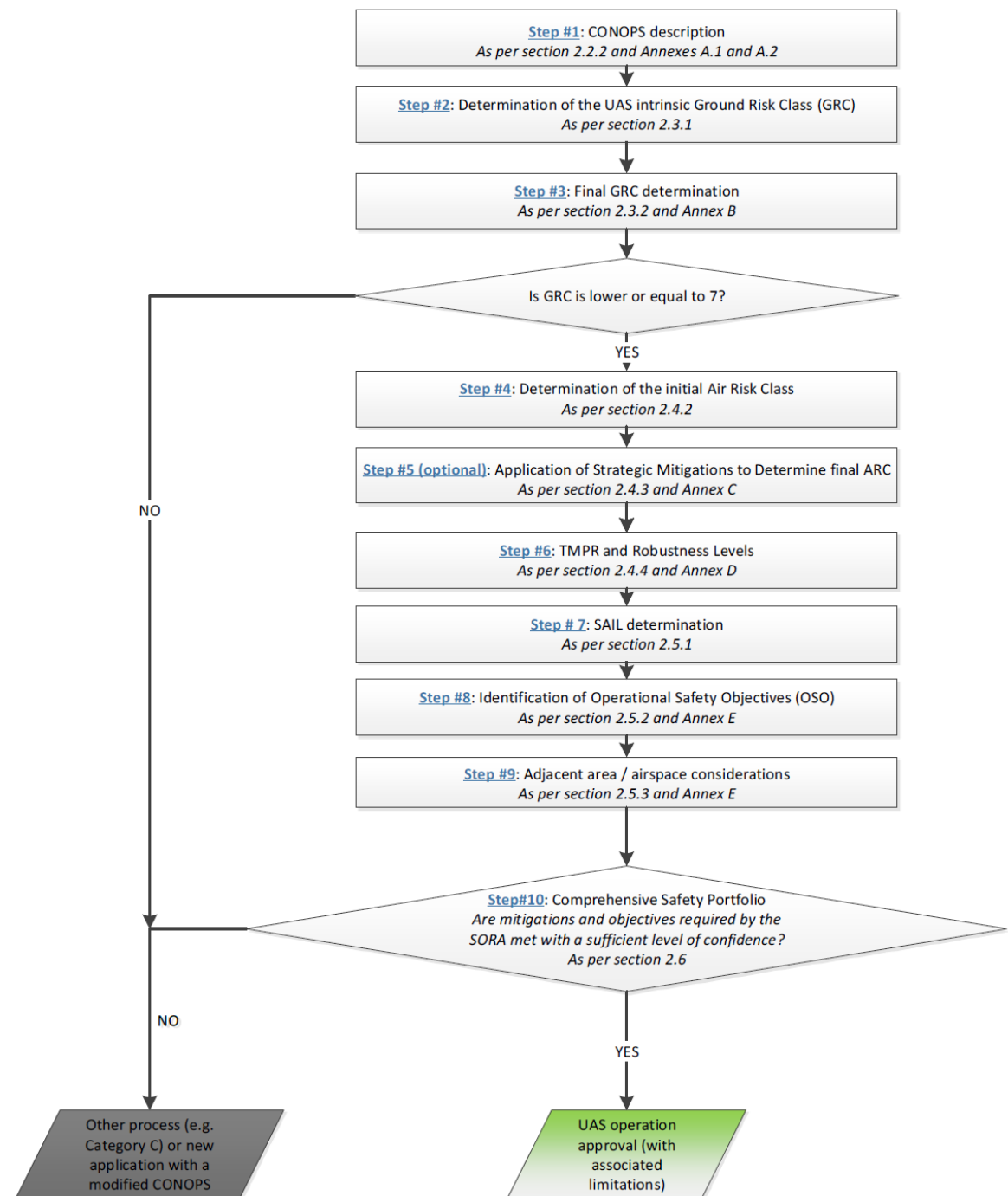


Figure 3 – The SORA process

New EU legislation as from July 1st 2020

Standard scenario:

**SPECIFIC
INCREASED RISK**

*: Only involved
people present

New EU legislation as from July 1st 2020

*: Only involved people present

SPECIFIC INCREASED RISK

Standard scenario:

- Declaration only, conf. of receipt required
- EASA working on it
- 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'* with no assemblies of people**
- Below 120m AGL in un controlled or controlled airspace with ATS authorisation

New EU legislation as from July 1st 2020

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



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

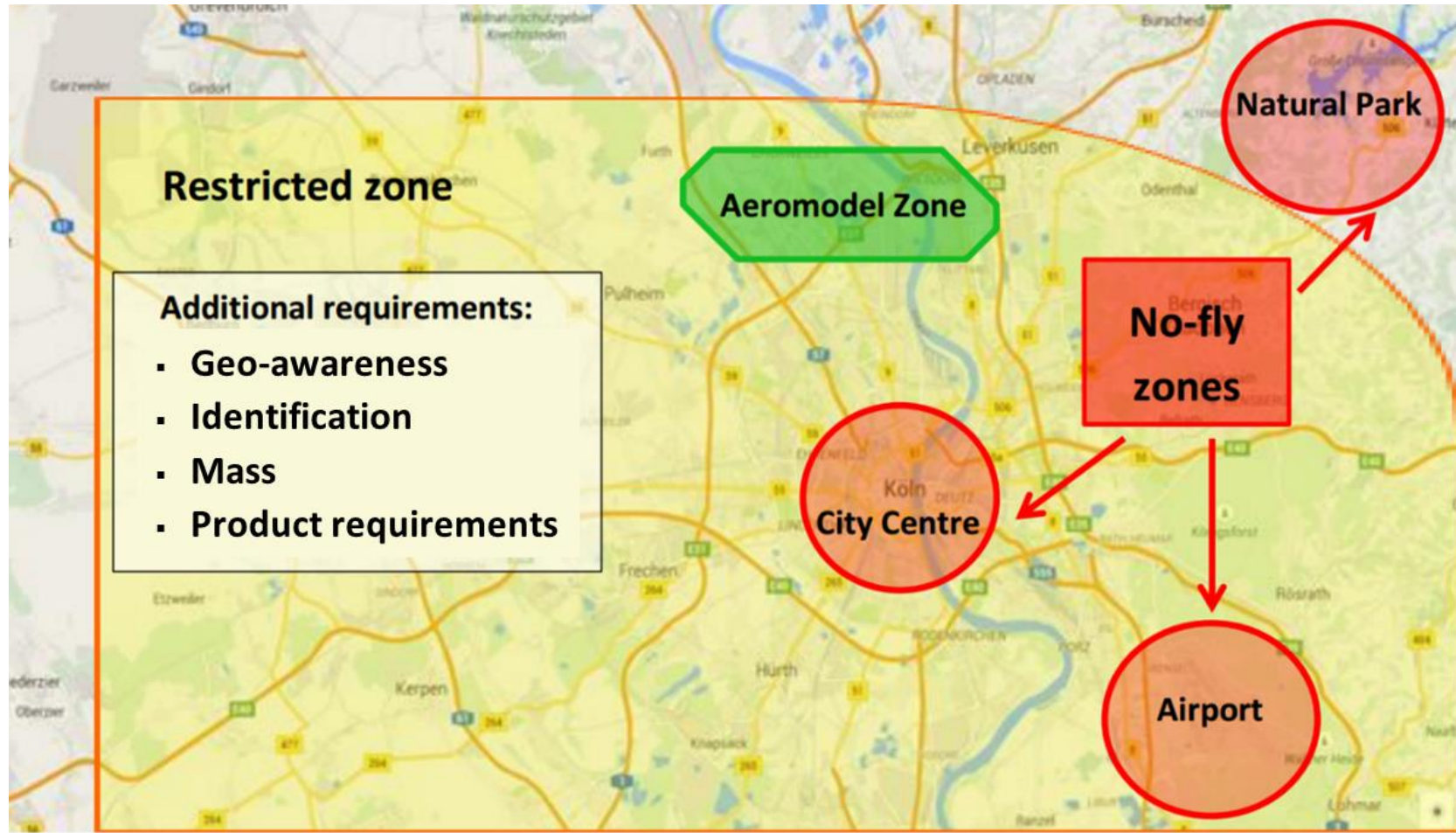
Geographical zoning (made publicly available in digital format)

- 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

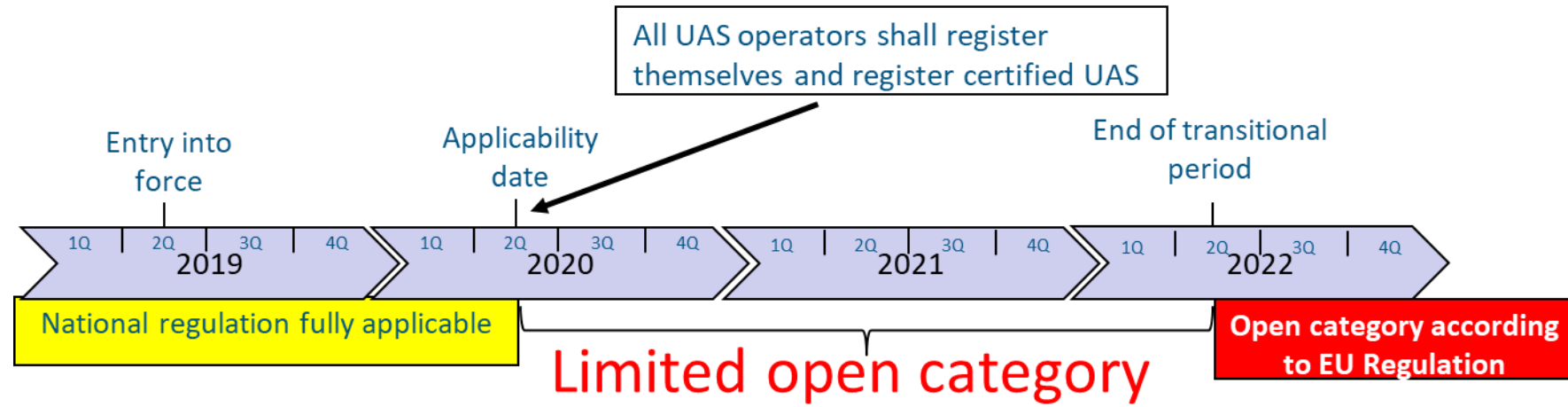
What members states can still organize



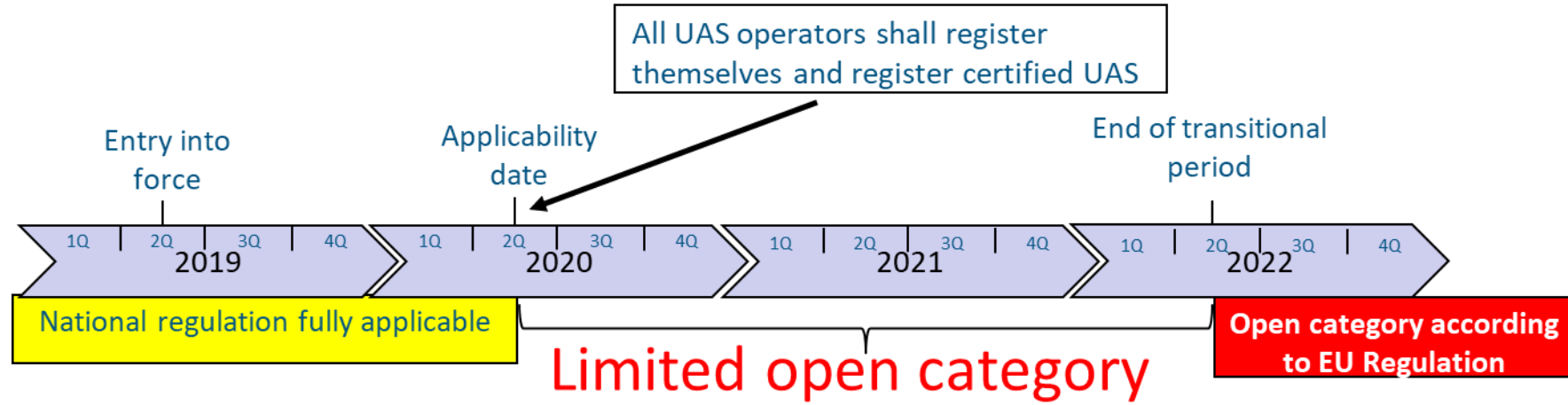
TRANSITIONAL PERIODS

Q&A

Open category



Open category



- 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

New EU legislation as from July 1st 2020

Quid for my existing drone?

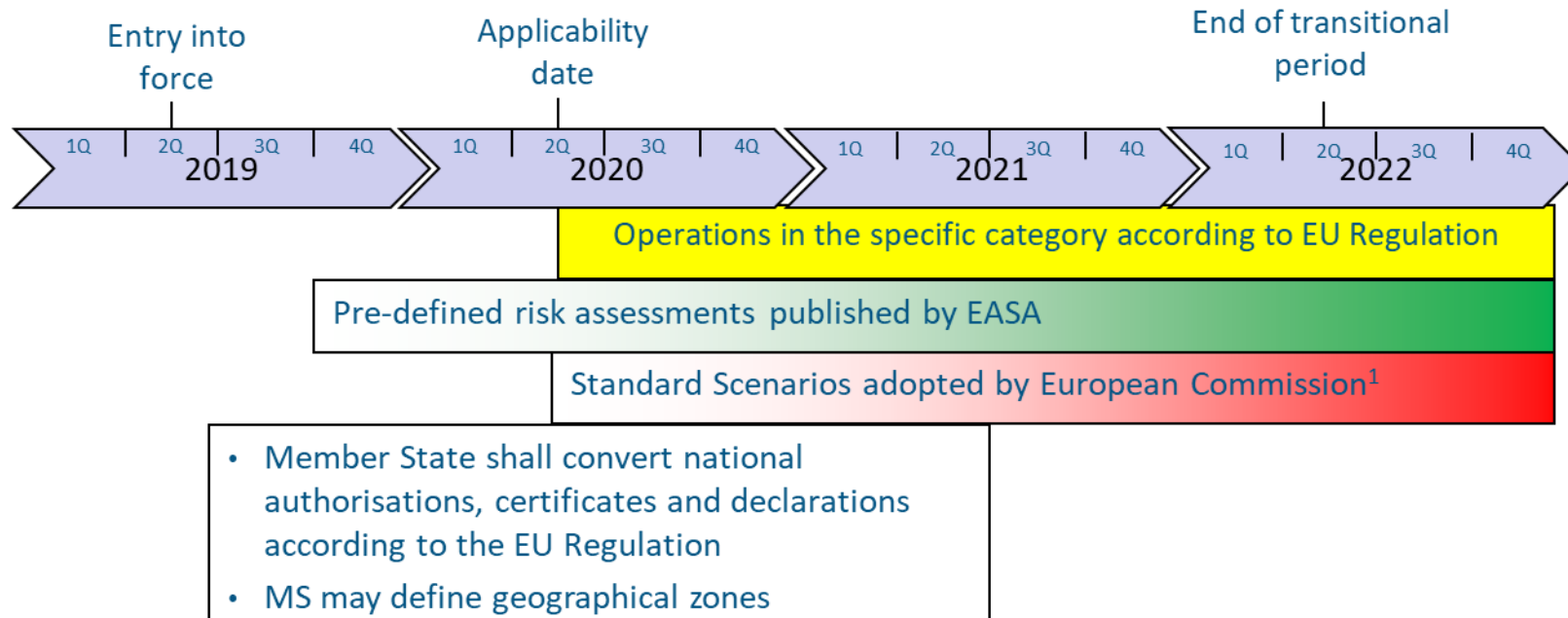
Limited OPEN CATEGORY

NON-Cx-COMPLIANT drones are still allowed to be operated up to 1st of July 2022:

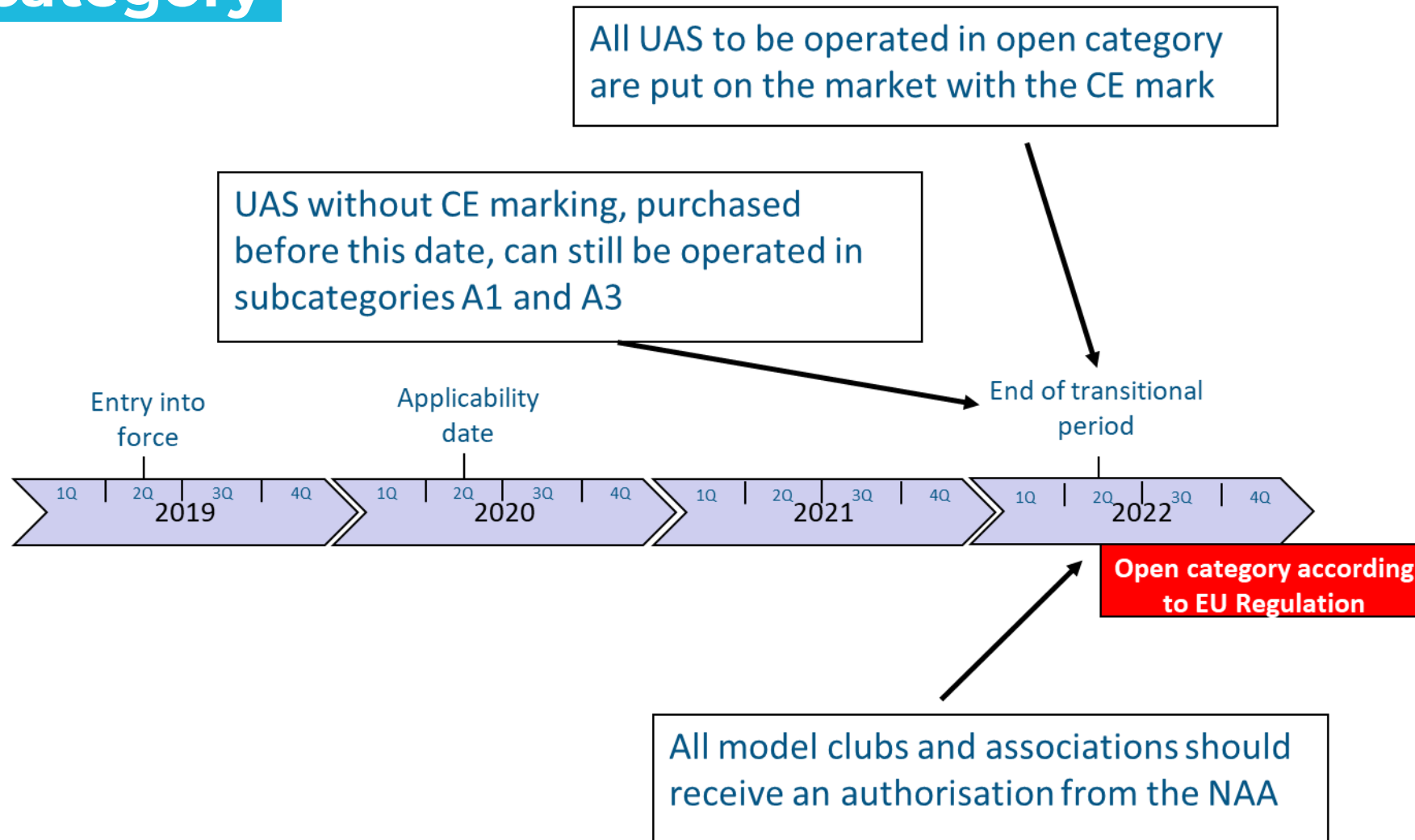
- In A1/C1 conditions **if MTOM < 500g** (i.s.o. 900g)
you cannot intentionally fly over uninvolved people
- Keeping a safe horizontal distance of **50m** from people **if MTOM < 2kg**
- In A3 conditions **if 2kg < MTOM < 25kg**
*fly in an area where it is reasonably expected that no uninvolved people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

Specific category & generic zoning



Open category



New EU legislation as from July 1st 2020

Quid for my existing drone?

Non-privately build NON-Cx-COMPLIANT drones are 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***

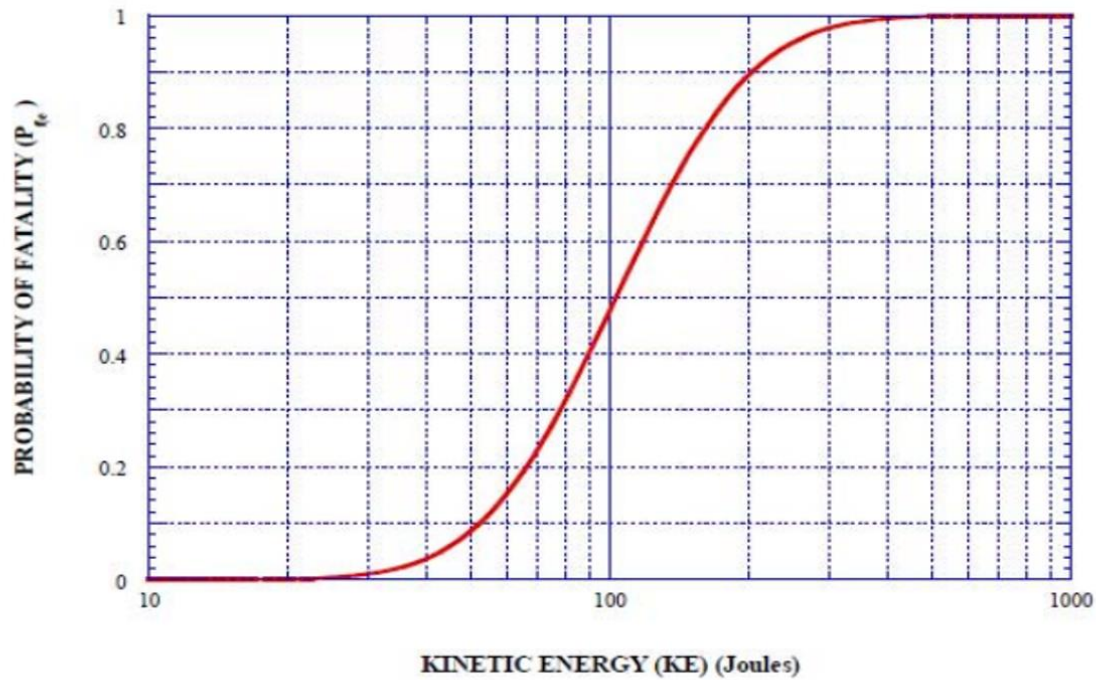
New EU legislation as from July 1st 2020

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

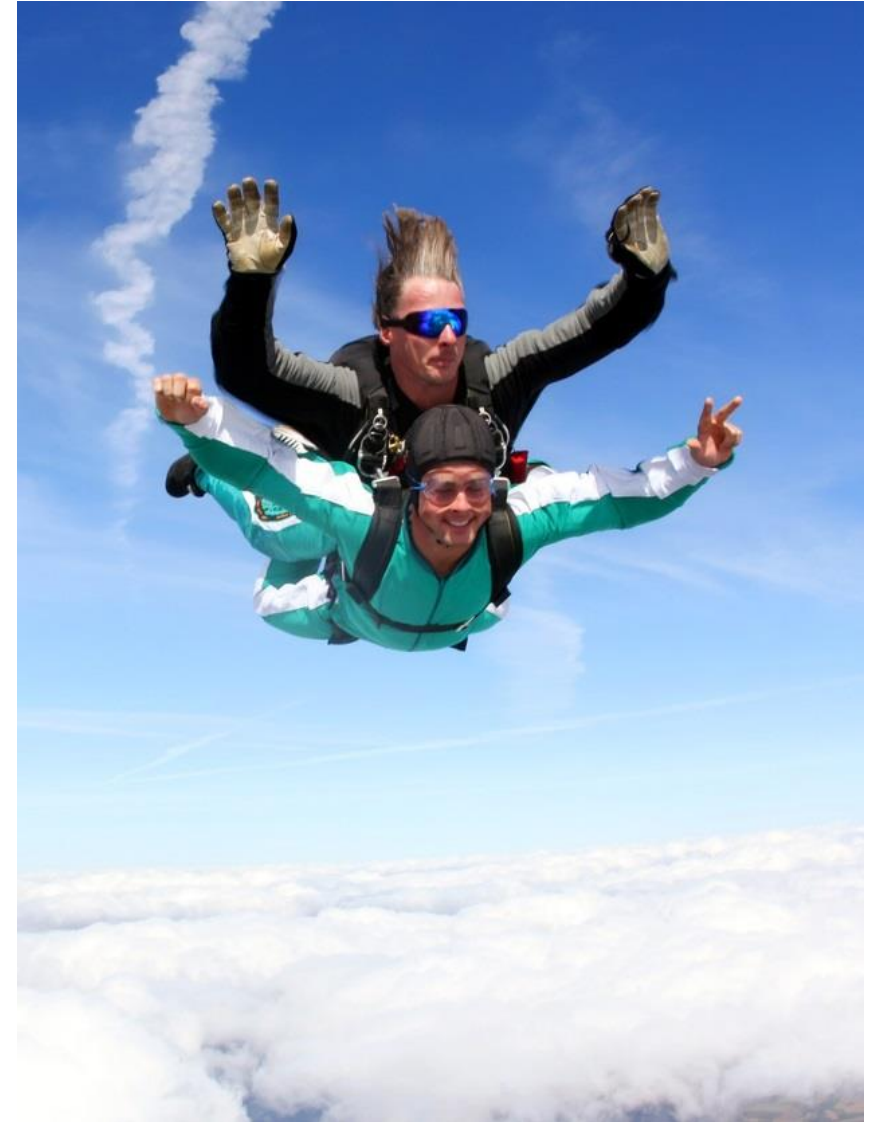
- Authorisations granted to UAS operators, certificates of remote pilot competency and declarations made by UAS operators or equivalent documentation, issued on the basis of national law, **shall remain valid until 1 July 2021**
- **By 1 July 2021 Member States shall convert** their existing certificates 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

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

- 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

THANKS

member of FABEC

skeyes nice to
guide
you