

SECOND UNMANNED AIRCRAFT SYSTEMS – REMOTE PILOTED AIRCRAFT SYSTEMS IMPLEMENTATION/REGULATION WORKSHOP (UAS/RPAS/W/2) FOR THE NAM/CAR/SAM REGIONS

The European drone regulation

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Which UAS operations are we addressing?



Aerial work



Urban air mobility



Leisure flights, including with model aircraft



International IFR flights



The regulatory framework



Your safety is our mission.

Legal Basis and scope of competences

Regulation (EU) **1139/2018** (new EASA Basic Regulation) extends **the EU competence to all UAS:**

- EASA carries out on behalf of Member States the functions and tasks of the state of designs for all UAS (type-certificate (TC); draft implementing rules: requirements; Oversight MS National Aviation Authorities NAAs))
- MS NAAs issue authorisations to operators
- Only civil drones but possibility to 'opt in' for aircraft carrying out services of state, military, firefighting, search and rescue, coast guard nature



The EU 'DRONE' Regulation

- Commission Implementing Regulation (EU) **2019/947**
 - *Rules + Procedures for operation of UAS*
 - *Registration*
- Commission Delegated Regulation (EU) **2019/945**
 - *Rules + technical requirements: design+ manufacturing, maintenance of UAS*
 - *Rules for Third Country Operators*
- 3 categories of UAS operations: **Open, Specific and Certified**

They replaced national regulations

Traditional vs holistic approach



Risk based

Performance based

Applicable to all
EU + Ch, No, Is, Li

The EU drone
regulation

Mutual recognition

Flexibility

**Prescriptiveness only when
no authorisation is required**

Operation centric, risk-based, performance based regulation



**OPEN category -
Low risk**

NO-PRE APPROVAL

**No Type certificate
CE marking process**

*Recreational purpose
Professional such as
photographers, inspections in
unpopulated areas*



**SPECIFIC -
Increased risk**

Approval from NAA

**Type certificate may be
required**

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



**CERTIFIED - Risk as
manned aviation**

**Certificate for the
operator, for the
UAS, and licensed
pilot**

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

Operation centric, risk-based, performance based regulation

Commission Delegated Regulation (EU)
2019/945 (UAS technical requirements
and third country operators)

&

Commission Implementing Regulation
(EU) 2019/947 (Registration and
operational requirements)

Applicability from 31 Dec 2020

Planned starting
from 2022

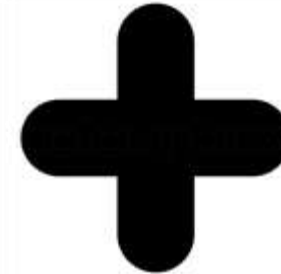
The structure of Reg. (EU) 2019/947

Cover regulation
(23 articles)

Part C - Light UAS
ops certificate (LUC)

Part B – UAS ops in
SPECIFIC cat.

Part A – UAS ops in
OPEN cat.



Acceptable Means of
Compliance
(AMC)

Guidance Material
(GM)

Important definitions from EU drone regulation

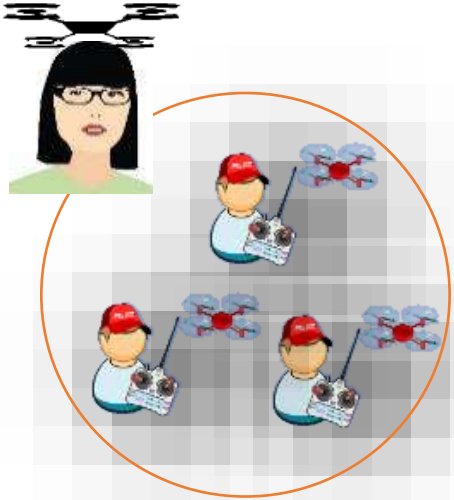
UAS



Model aircraft = UAS



UAS Operator

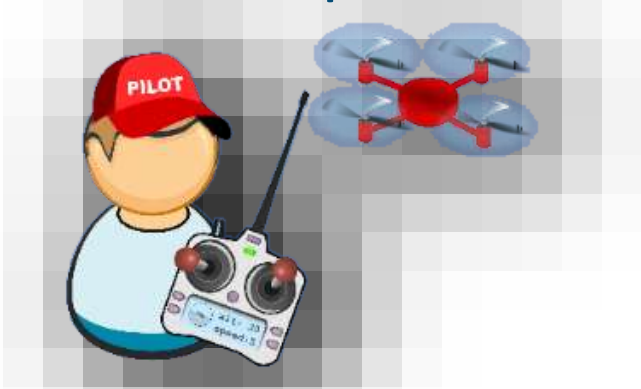


Involved person



However special provisions apply

Remote pilot



Article 14 - Registration of UAS operators and certified UAS

All UAS operators must be registered in the EU Member State of residence!

The unique exceptions being:

mass < 250gr
and no camera



Toy with mass < 250gr
even with a camera

Member State of
residence or main
place of business

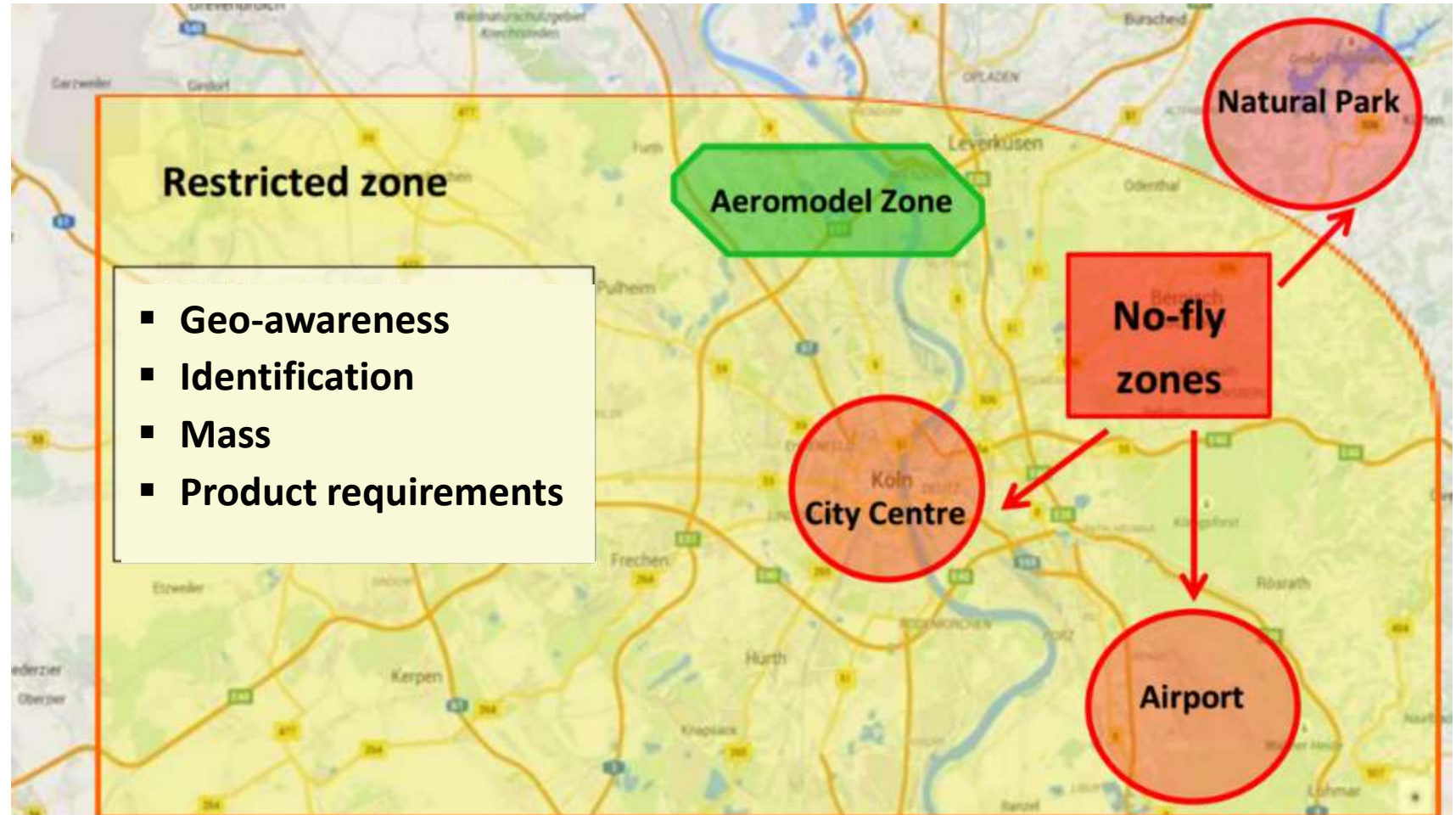


Registration of drones only when a certificate of
airworthiness is mandated



Flexibility for Member States

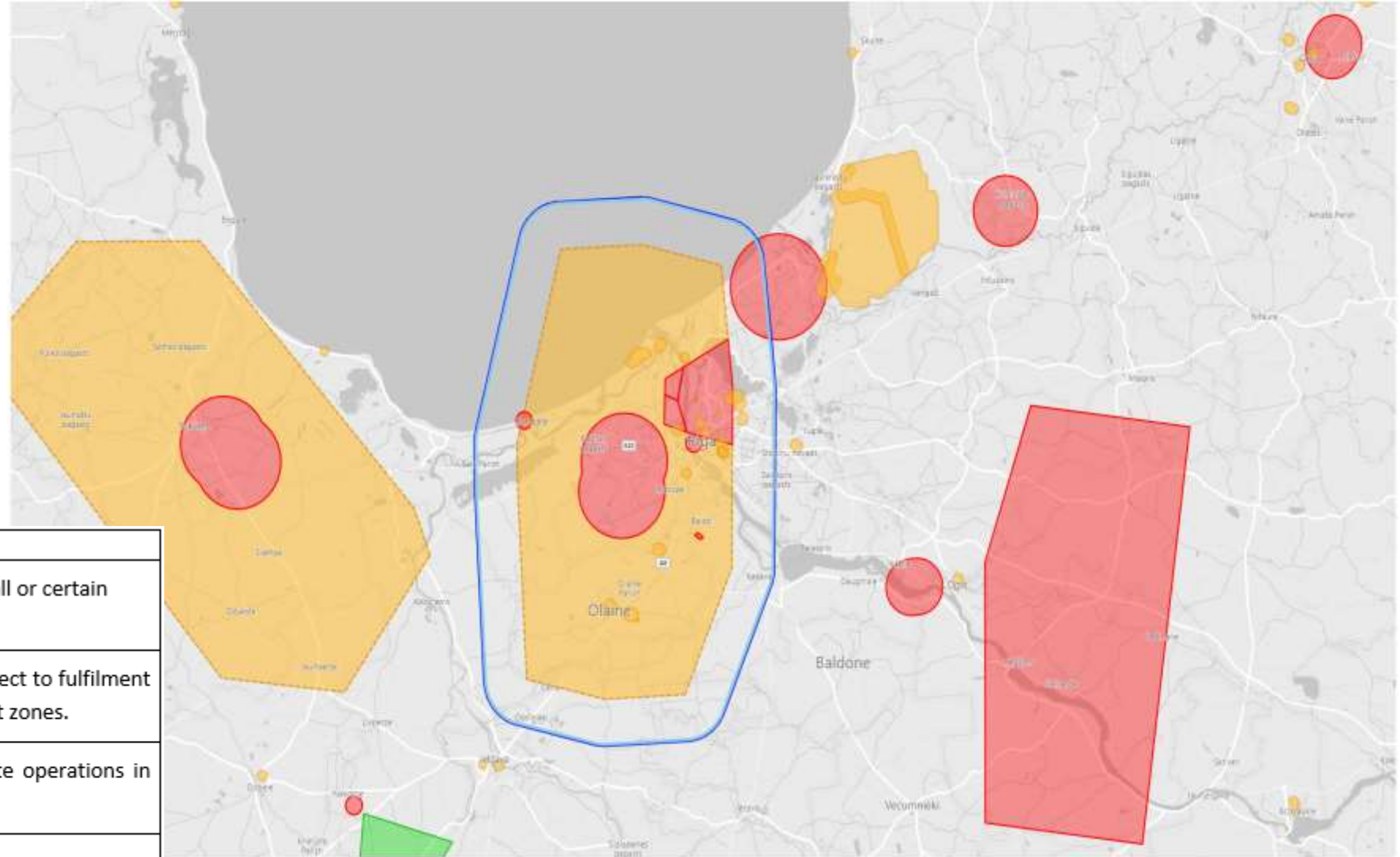
Geographical zones defined by Member States







Geo-awareness on drones to support remote pilots

Geographical zones published by Member States

Practical example:



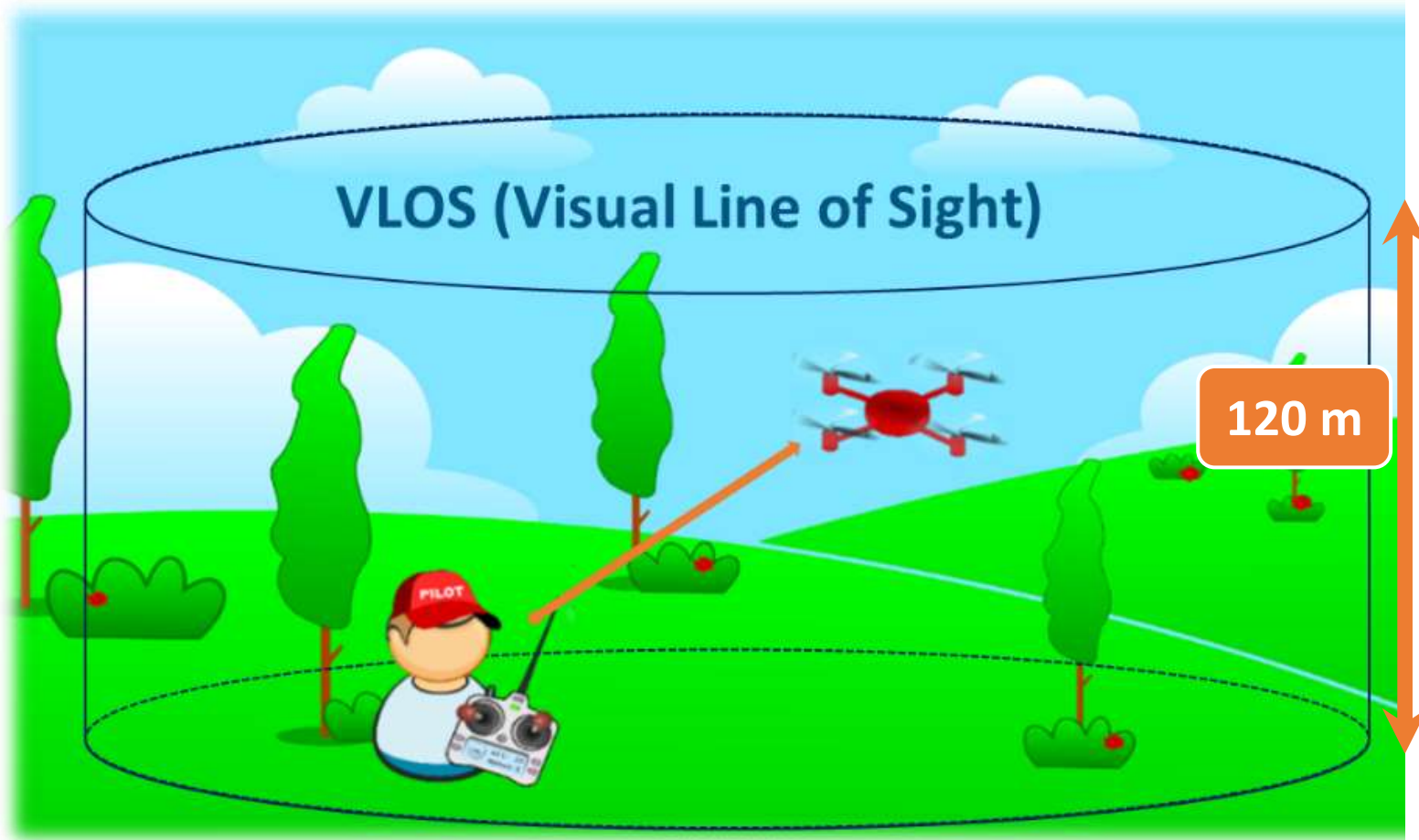
COLOR CODE	MEANING
	Flights are prohibited for operations in all or certain classes.
	UAS operations are limited and are subject to fulfilment of set of conditions imposed for relevant zones.
	UAS geographical zones, which facilitate operations in the "OPEN" category
	U-space airspace

The 'open' category



Your safety is our mission.

Open category – the main boundaries



- MTOM < 25 Kg
- Remote pilot minimum age 16, unless supervised (it may be reduced to 12, no minimum age for toys)
- No carriage of dangerous goods
- No dropping of material
- No autonomous operations

- A1 fly over people
- A2 fly close to people
- A3 fly far from people

Privately built
with MTOM<250g



Privately built
with MTOM<25kg



1) Buy a drone with CE markings - Leaflets

Each drone package will include consumer information



This drone is an aircraft.
Aviation law applies.

**As a drone pilot,
you are responsible
for flying your drone safely.**

Before flying, as a drone pilot, you must

- ✓ make sure the drone owner is registered at his or her national authority (unless already registered)
- ✓ make sure the owner registration number is displayed on the drone
- ✓ read and follow the manufacturer's instructions



DO

-  Make sure you are adequately insured
-  Check for no-fly zones and any limitations in the area where you want to fly
-  Keep the drone in sight at all times
-  Maintain a safe distance between the drone and people, animals and other aircraft
-  Inform your national aviation authority immediately if your drone is involved in an accident that results in a serious or fatal injury to a person, or that affects a manned aircraft
-  Operate your drone within the limits defined in the manufacturer's instructions

DO NOT

-  Do not fly over large group of people
-  Do not fly higher than 120m from the ground
-  Do not fly near aircraft & in the proximity of airports, helipads or where an emergency response effort is ongoing
-  Do not infringe other people's privacy.
-  Do not record intentionally or publish photographs, videos or audio recordings of people without their permission
-  Do not use the drone to carry dangerous goods or to drop material
-  Do not modify your drone.

2) Registration of UAS operator

UAS Operators shall register themselves when they operate:

➤ **In the open category:**

- UAS with an MTOM > 250g
- UAS (non toys) with an MTOM < 250g equipped with a sensor able to capture personal data



Member State of residence or main place of business



➤ **In the specific category:** All operators



2) UAS operator registration number (example)

The operator registration number must be visible in the drone



3) Train the remote pilot: Subcategories A1/A3



Privately built
with MTOM < 250g

- Familiarisation with the manufacturer's instructions



- Familiarisation with the manufacturer's instructions
- Complete the online training
- Pass the online test (A1/A3)



Privately built
with MTOM < 25kg

Remote Pilot training proof
of completion number



EASA
European Union Aviation Safety Agency

NAA logo

A1/A3
OPEN SUB
CATEGORY

Please write this in your own national language
PROOF OF COMPLETION OF THE ONLINE TRAINING

Name (1st name) **First Name**
Numero di registrazione (identification number) **NNN-RP-123456789ABC**

Cognome (last name) **Last Name**
Data di scadenza (expiration date) **dd.mm.yyyy**

After passing the examination, the MS issues the proof to the remote pilot

3) Train the remote pilot: subcategory A2

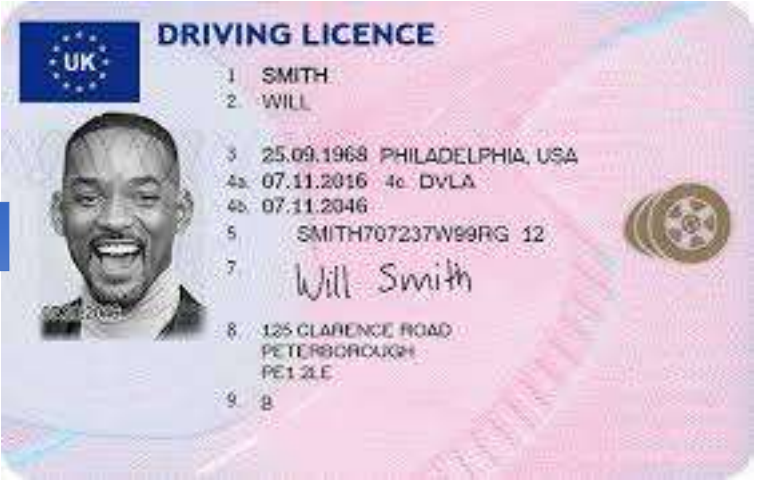


- Familiarisation with the manufacturer's instructions
- Complete the online training
- Pass the online test (A1/A3)
- **Conduct a self-practical training in a “safe” area (A3 subcategory conditions)**
- **Declare completion of the practical training**
- **Pass a written test in an entity recognised by the competent authority (A2)**



UAS operator registration number vs remote pilot training proof of completion number

Pilot licence:



Operator registration number:



Summary of 'open' category



Fly respecting rules



Train the remote pilot



Register as operator



Buy



The 'specific' category



Your safety is our mission.

Specific category - Range of applicability

- ❑ UAS operation exceeding the limitations defined in the 'open' category.
- ❑ Examples :
 - ✓ Beyond Visual Line of Sight (BVLOS)
 - ✓ higher than 120m
 - ✓ using a drone with a weight > 25 kg
 - ✓ with the purpose of dropping material
- ❑ But, if one of the following conditions is met, the operations will have to be in the **Certified category**:
 - ❖ operations over assemblies of people with an UAS larger than 3 m
 - ❖ transport of people
 - ❖ transport of dangerous goods if in case of accident they pose high risk for third parties

Specific category – Risk assessment



SORA

(Specific Operation Risk Assessment)

ConOps description

Overflown area

Airspace

Operational conditions

UA characteristics dimension

Specific assurance and integrity level (SAIL)

- SAIL I & II: low risk
- SAIL III & IV: medium risk
- SAIL IV & V: high risk

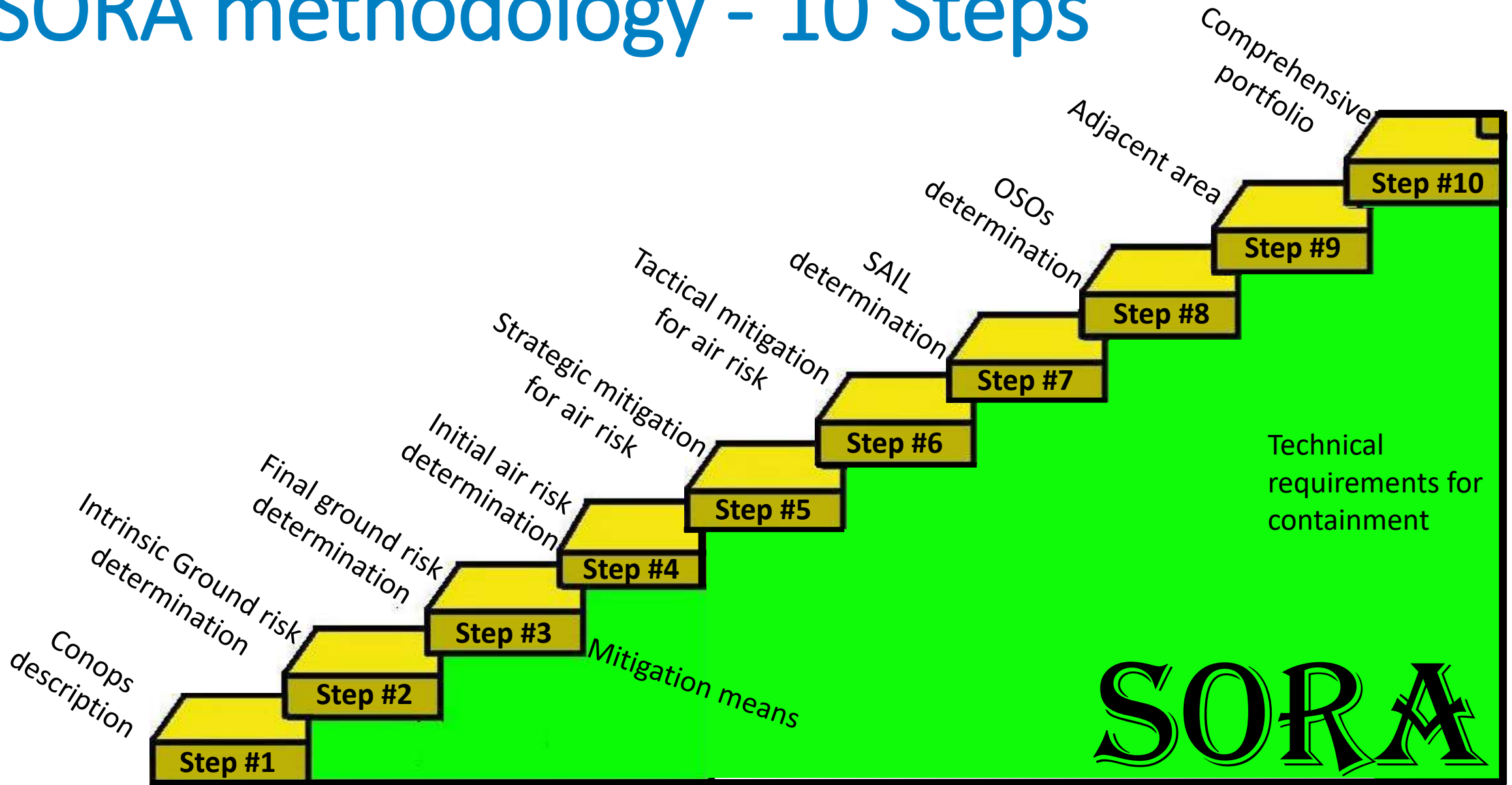
Operational safety objectives (OSO) and mitigations for a safe and secure flight

- Flight conditions
- Operational limitations,
- Remote pilot and other personnel competencies
- Technical requirements of the UAS
- Security and privacy

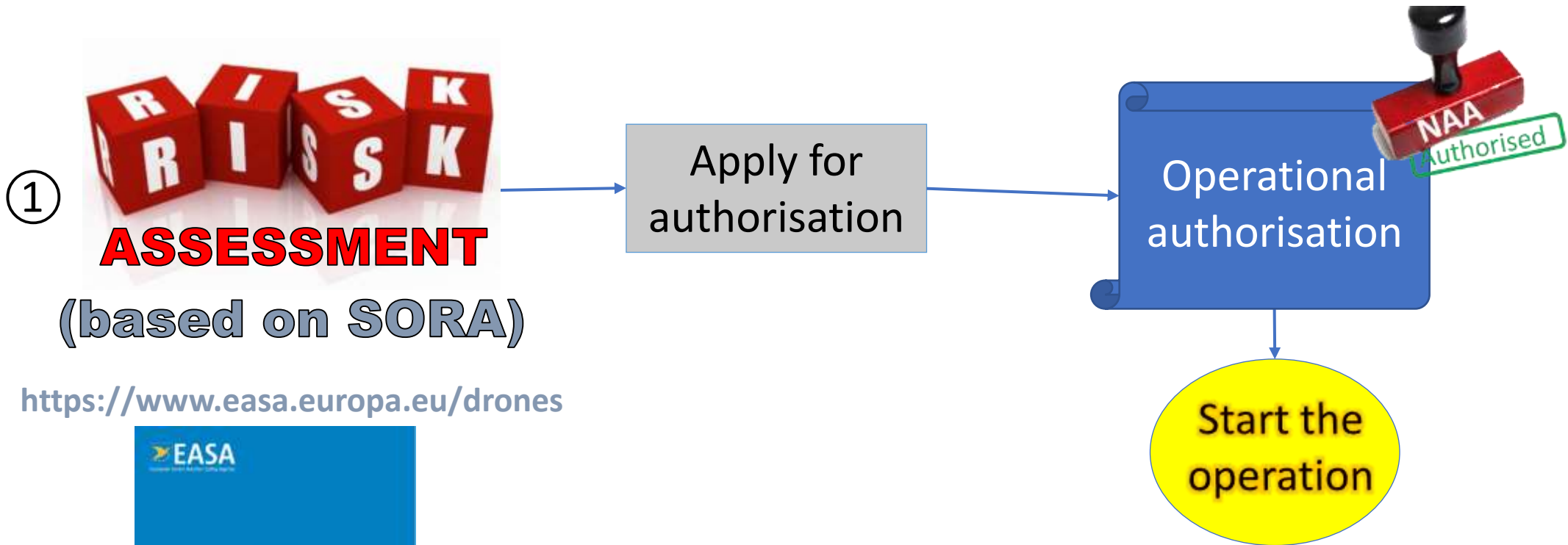
Included in the AMC to Regulation (EU) 2019/945 published on [EASA website](https://www.easa.europa.eu)



SORA methodology - 10 Steps



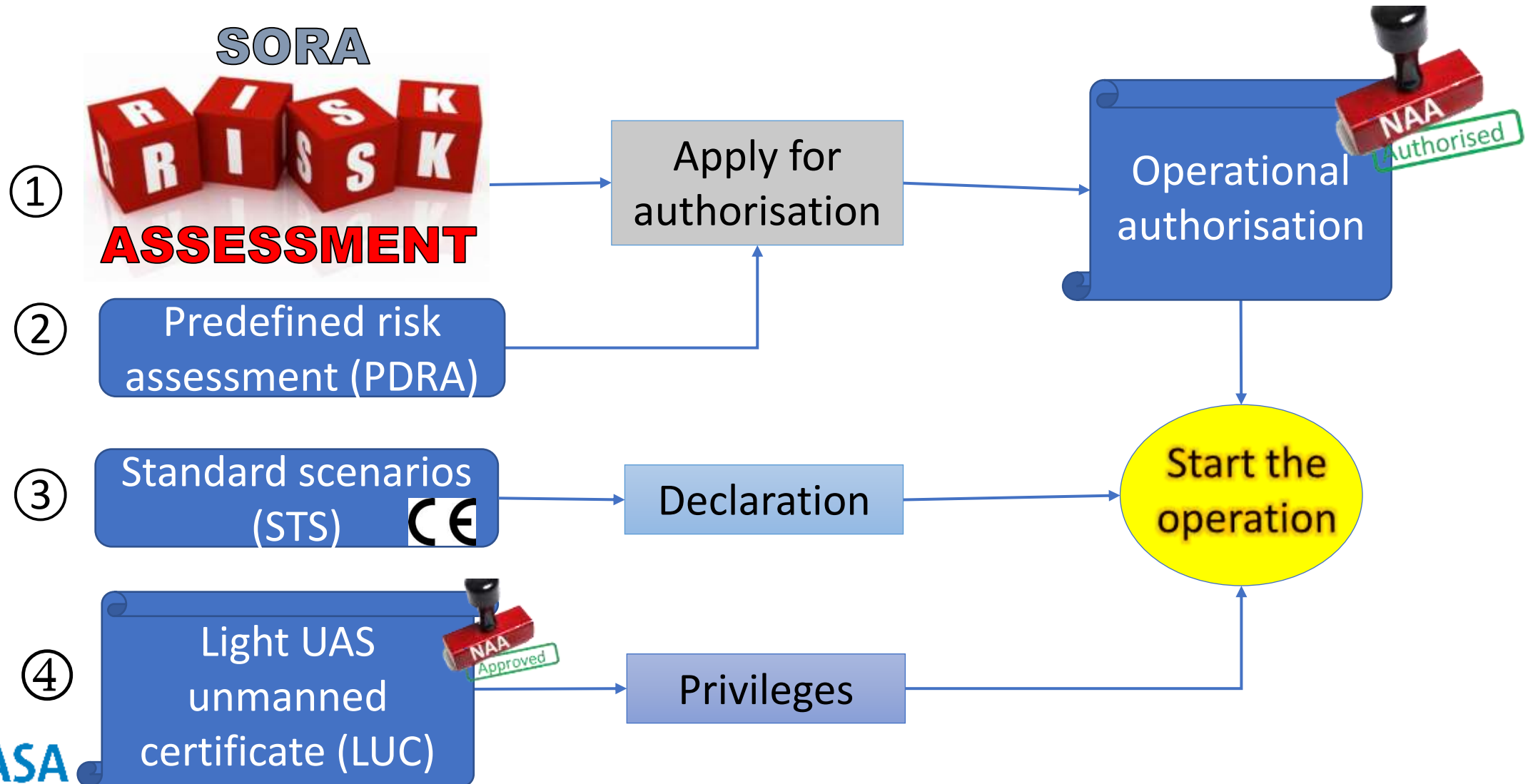
How does it work the 'specific' category?



<https://www.easa.europa.eu/drones>



How does it work the 'specific' category?



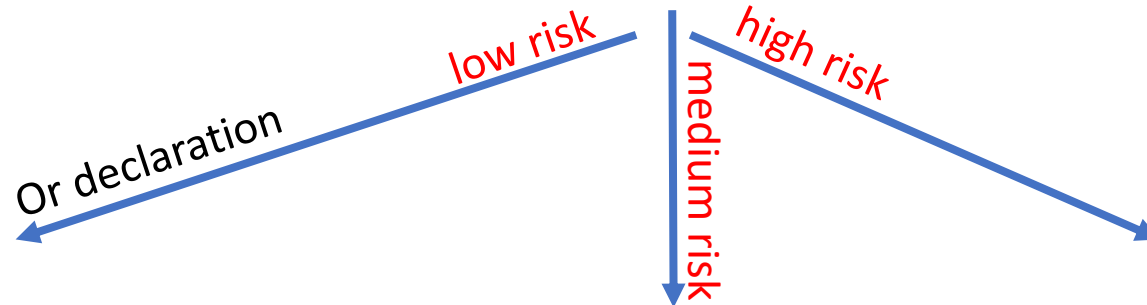
Verification of the design of the UAS

Open category



Specific category

Depending on the risk



Certified category



Certification basis:

- SC Light UAS
- or
- CS- x complemented by future CS UAS

The U-Space



TE_GEN.00409-001
Your safety is our mission.

U-space

- U-space is the European brand for UTM
- U-space regulation is intended to avoid in the air,



what we sometimes see on the roads....

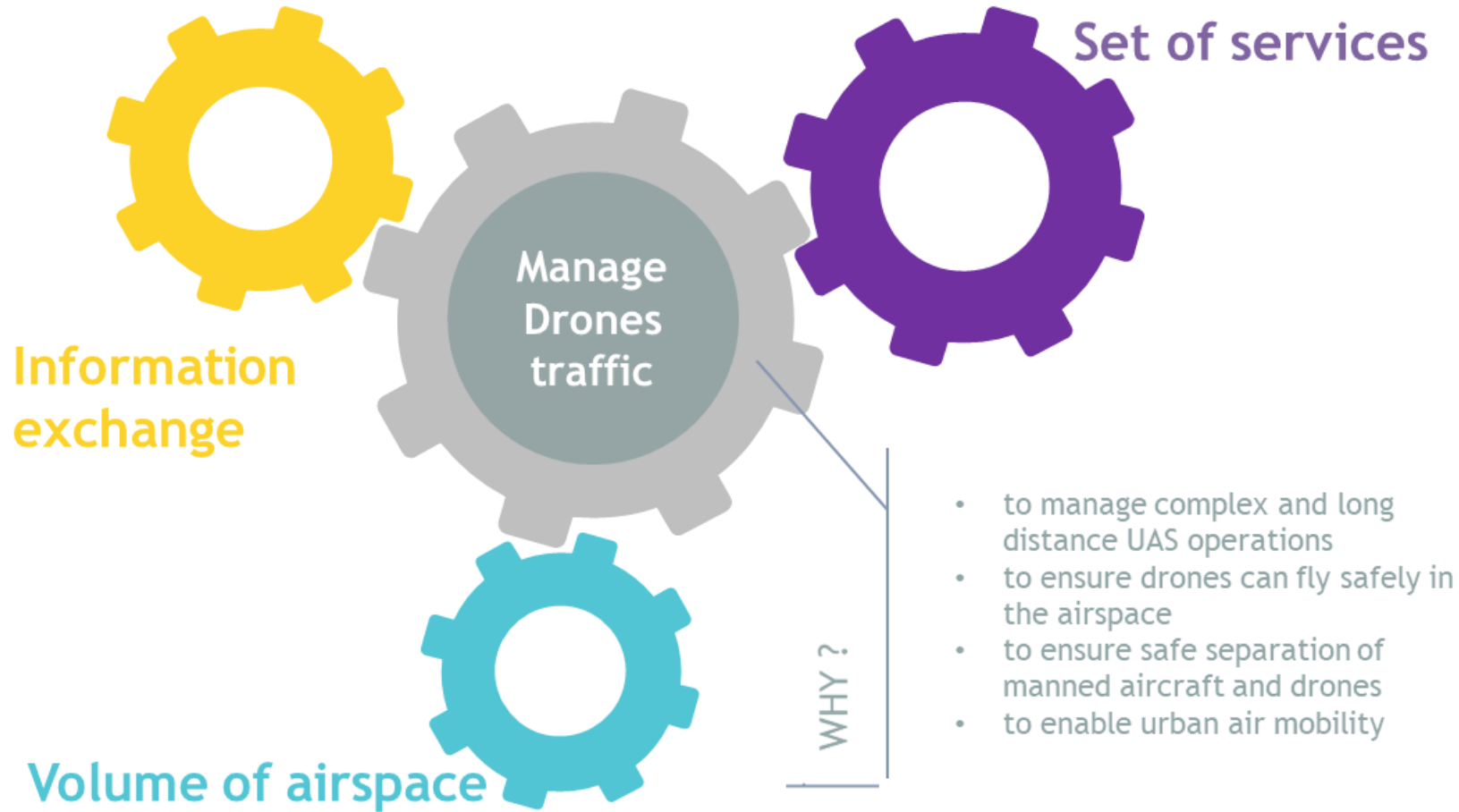


U-space

...and to enable an EU competitive drone service market

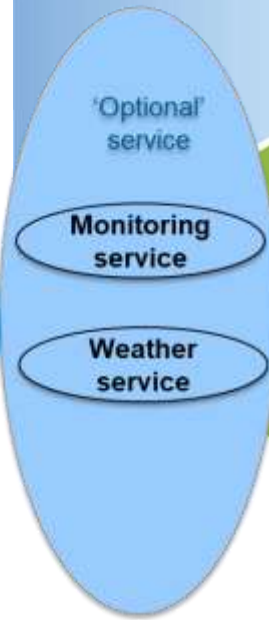
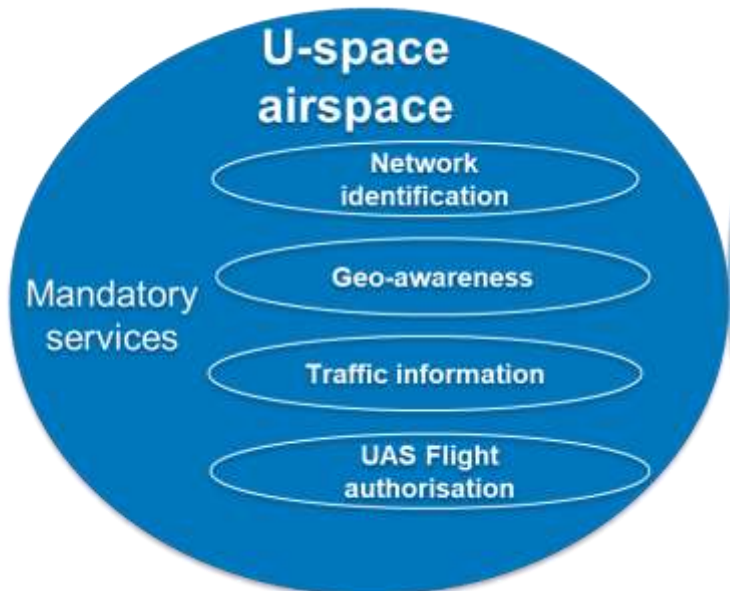


The U-space 'system'



The U-space

Airspace where services are provided.



The 'certified' category



TE_GEN.00409-001
Your safety is our mission.

Operations in 'certified' category

- UAS operations in the '**certified**' category include risks that cannot be mitigated in the 'specific' category.
- Additionally:



operations over assemblies
of people with an UAS
larger than 3 m



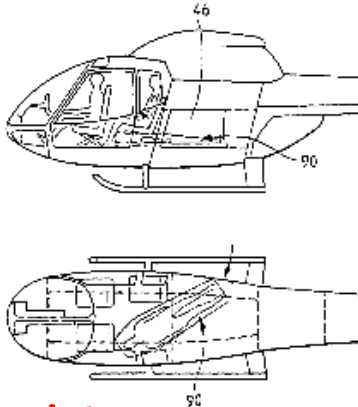
transport of people



transport of dangerous goods
if in case of accident they pose
high risk for third parties

How is the risk mitigated in the certified category?

→ UAS operations classified in the certified category when to mitigate the risk it is required:



Airworthiness certification

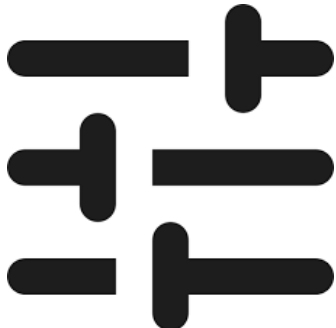


certification of the operator



licensing of the remote pilot

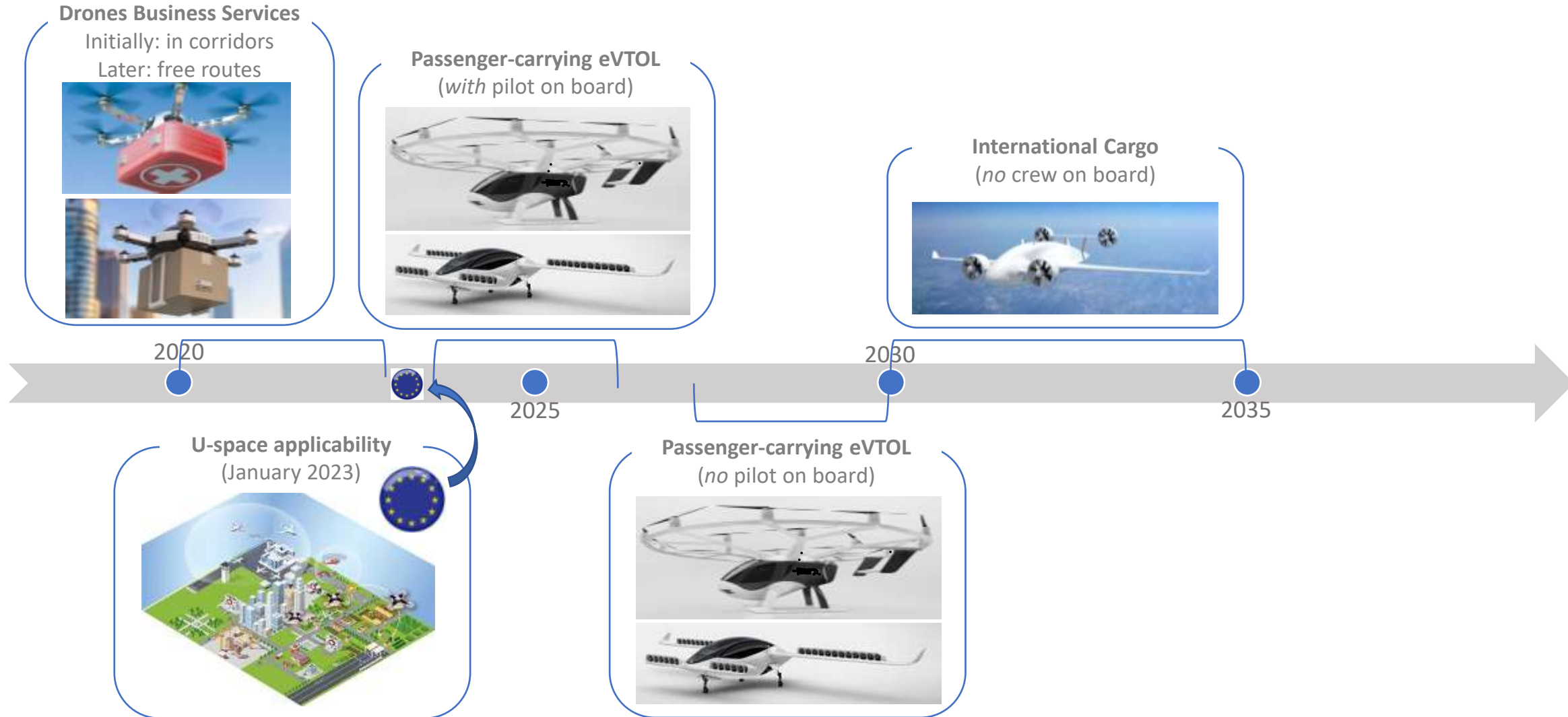
RMT.0230: objectives and planning



Comprehensive and interrelated set of affected rules




Expected industry developments



Next rulemaking activities


2020		2021				2022				2023				2024
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1



Specific category
AMC/GM Low-medium risk


NPA (Red Star) **Decision** (Blue Star)

Guidelines (Green bar)




U-space
AMC/GM

NPA (Red Star) **Decision** (Blue Star)



Specific category
High risk



Manned UAM
Type#3 operations

NPA #1 (Red Star) **Opinion #1** (Blue Star)



Certified category
Type#2 operations
Unmanned UAM



Certified category
Type#1 operations
IFR cargo

NPA #2 (Red Star) **Opinion #2** (Blue Star)

Lesson learned



Your safety is our mission.

Lessons learned

- Regulatory material must ensure the right balance between simplicity and flexibility;
- Use a stepwise approach allowing operators and authorities to gain experience in a safe environment;
- “Growing” exercise to be carried out by all stakeholders together
- Safety promotion is an essential element to ensure safe ops

Safety promotion



Your safety is our mission.

How does EASA promote safety?

- Regular workshops organised with EU MSs
- Webinars open to public
- Website dedicated to drones
- Informative material
- Participation to third parties events
- Press releases, interviews, videos

Drone Safety promotion examples

Do you want to learn more about the new design verification process for authorising #drone operations?



 Antonio Marchetti
  Natale Di Rubbo
  John Franklin

Join us at the EASA drones live stream
May 7, 2021 - 10:00-11:30 CET (UTC+2)



OPERATING A DRONE FOR FUN

What do I need to know if I have a Drone in Class 0, 1, 3 or 4



Get registered

1. Buy a drone and check its requirements. Tag the drone to the correct drone class.
2. Register online at your National Aviation Authority's website.
3. Get a registration ID number.
4. Attach the ID number to the frame and upload it to the remote ID system.

Train to be a good pilot

5. Train online and pass the online exam at your National Aviation Authority's website.
6. Get the remote pilot certificate.

Prepare for every flight

7. Check where you can fly and for what type of drone. Check the rules at your National Aviation Authority's website.
8. Read the Drone's manual and ensure your Drone is ready for every flight.
9. Repeat the limitations of the open category.
10. Enjoy and fly safely and responsibly. You are the pilot!

 #EASAdrones
 



YOU ARE RESPONSIBLE FOR EVERY FLIGHT




Follow the drone rules and the manufacturers' instructions to stay safe
Get familiar with and follow the European Rules to ensure you fly your drone safely. Everything you do with your drone is your responsibility.



Como piloto de dron es usted responsable de volarlo de forma segura.

Este dron es una aeronave. Le es aplicable el Derecho aeronáutico.

Antes de volar, debe leer y seguir las instrucciones del fabricante



Compruebe que está autorizado a pilotar:
www.easa.europa.eu/drones/MAA




¿QUÉ DEBE HACER?

- Comprobar que dispone de un seguro adecuado.
- Controlar el lugar antes de volar, sin ser o alguien autorizado en la zona en la que tiene previsto volar.
- Asegurar de que puede ver el dron en todo momento.
- Mantenga una distancia segura entre el dron y las personas, los animales y otras aeronaves.
- Informe inmediatamente a la autoridad nacional de aviación si el dron está involucrado en un accidente que haya causado lesiones graves o mortales a una persona o que haya afectado a una aeronave tripulada.
- Utilice su dron dentro de los límites definidos en las instrucciones del fabricante.

¿QUÉ NO DEBE HACER?

- No vuele sobre grandes grupos de personas.
- No vuele a una altura superior a 120 m sobre el suelo.
- No vuele cerca de aeronaves ni en las proximidades de aeropuertos, helipuertos o lugares en los que se estén realizando operaciones de emergencia.
- No violen la privacidad de otras personas.
- No utilice el dron para transportar mercancías peligrosas o dejar caer material.
- No modifique su dron, solo está permitido cargar software reconocido por el fabricante del dron.

EASA Drones - Safe drone operations



Watch on  YouTube



<https://www.easa.europa.eu/light/topics/operators-guidance-drone-pilots>

EASA drone website

<https://www.easa.europa.eu/domains/civil-drones-rpas>

Easy access rule including:

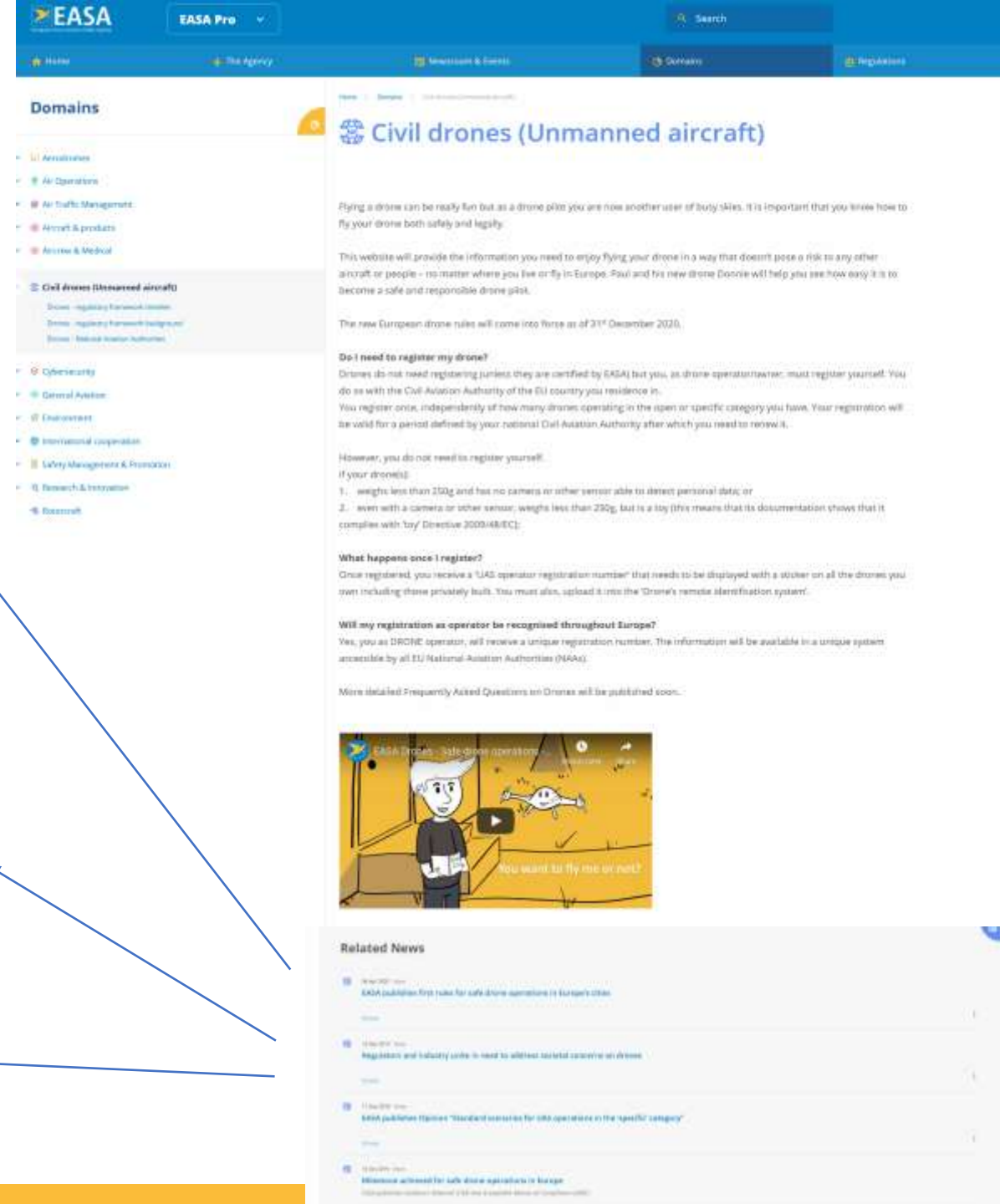
- Regulation (EU) 2019/947
 - AMC/GM to the regulation (including SORA)
- Regulation (EU) 2019/945

Videos and presentations explaining Regulations (EU) 2019/947 and 2019/945

FaQ for the open and specific category



Questions may be sent to drones@easa.europa.eu



Standardisation of 'drones regulations'



The EU aviation safety system



Standardisation: the EU monitoring mechanism

The EU single market: four freedoms of movement

Goods / Services / People / Capital

Mutual recognition of certificates
Basic Regulation Art. 67

EASA monitoring the application of the rules
Basic Regulation Art. 85

States: 28 EU + 3 EFTA = **31**

Implementation monitoring (IM) – innovative approach

→ **EASA monitors** how Authorities implement the new framework

→ Data collection through questionnaire (**surveys**) and review, to achieve 3 goals:

→ Detect **significant non-compliances** → **Findings**

→ Identify **good/best practices** → **Sharing**

→ Assess whether the **rule** needs fine-tuning → **Improving**

→ Expected **benefits** of this approach:

→ **Applied concurrently** to all Competent Authorities

→ Full picture of the situation by end of 2021; prepare the ground for on-site inspections

→ **Efficient use of limited resources** (both on EASA and on Authorities' side)

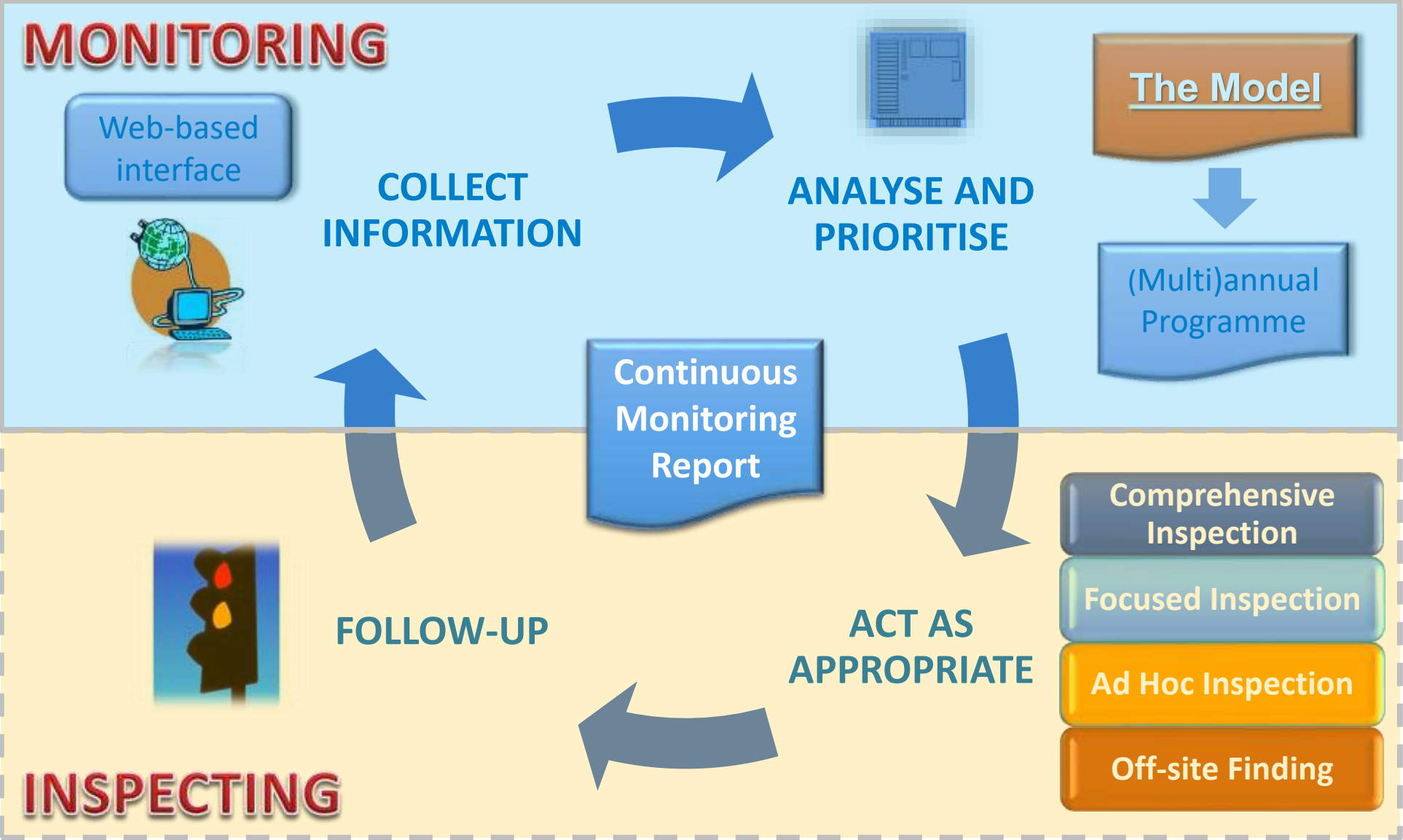
→ No inspections in 2021; 1 or 2 familiarisation visits; ad-hoc inspections if significant concerns

→ **Positive attitude** towards the new domain

→ Actively support a smooth implementation, rather than policing it



Standardisation: Continuous Monitoring Approach



Thank you for your attention



easa.europa.eu/connect



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An Agency of the European Union 