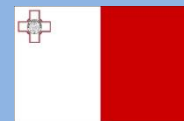


EASA DRONE REGULATIONS



Overview & Implementation



Dr Analiza Abdilla
Civil Aviation Directorate
December 2019

AGENDA



- Regulation
- UAS Categories
- Tasks of the Member States
 - Market Surveillance
- U-Space
- Next Steps

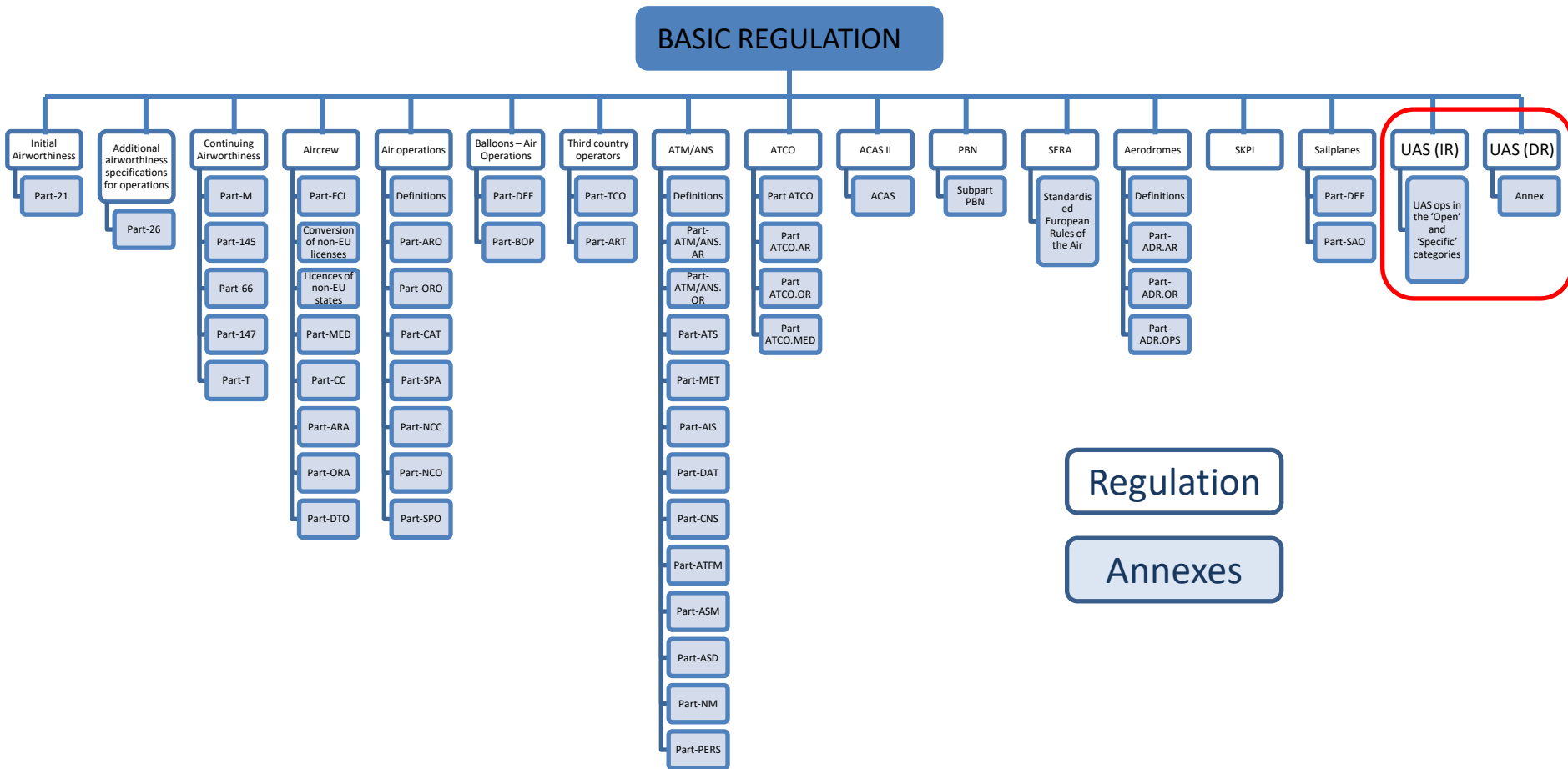


REGULATION



Regulation

Organigram

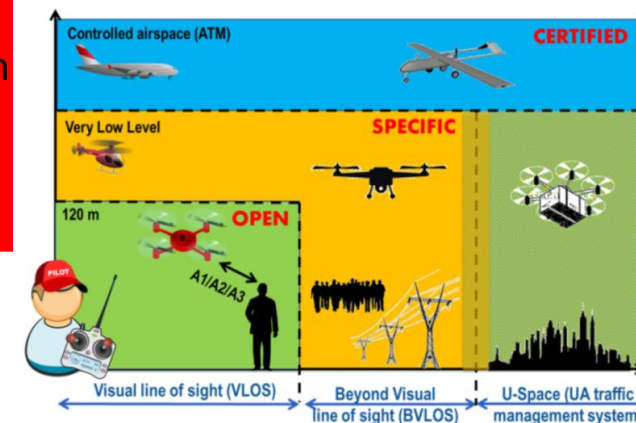


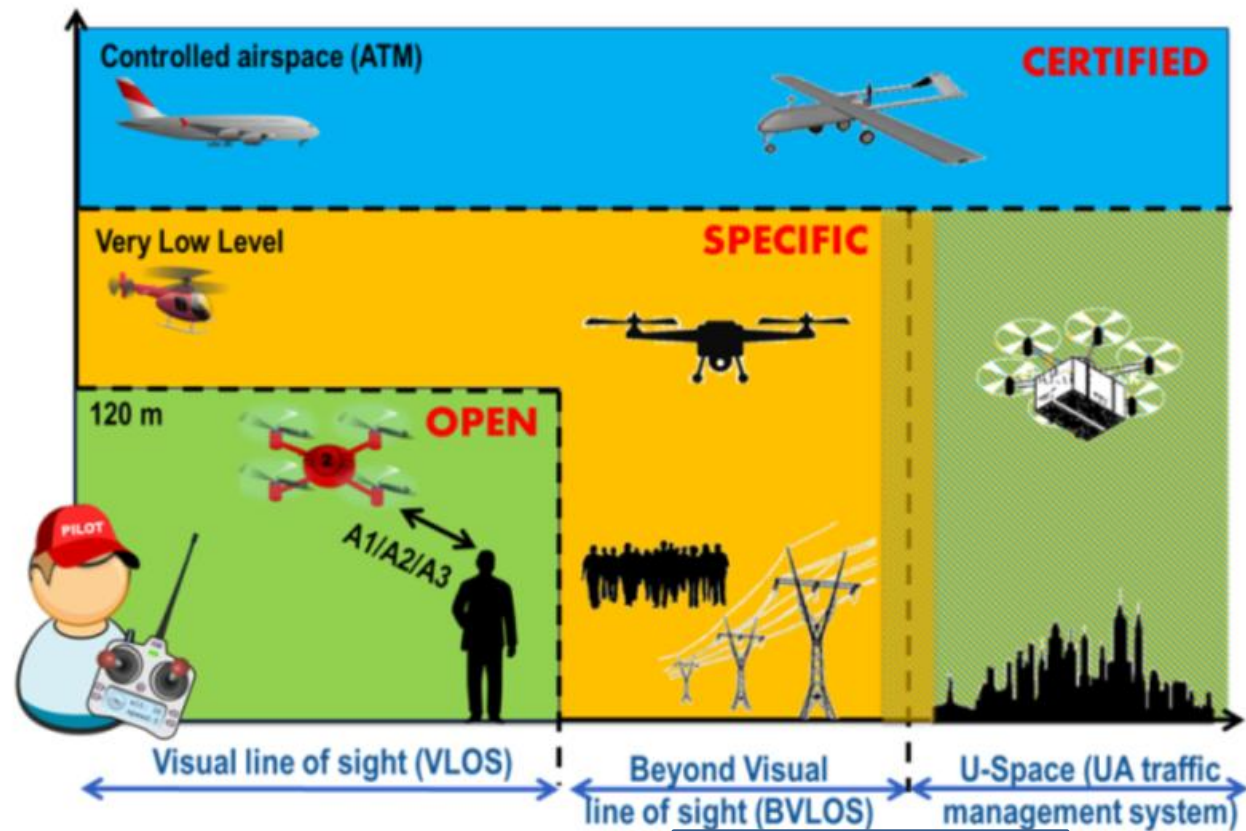
- Publication of:
 1. **Commission Delegated Regulation (EU) 2019/945** of 12 March 2019 on **unmanned aircraft systems and on third-country operators of unmanned aircraft systems**
 - entered into force & became applicable on **1 July 2019**;
 2. **Commission Implementing Regulation (EU) 2019/947** of 24 May 2019 on the **rules and procedures for the operation of unmanned aircraft**
 - entered into force on 1 July 2019 & **will become applicable on 1 July 2020**;
 3. **Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Commission Implementing Regulation (EU) 2019/947** – Issue 1: 9 October 2019.
 4. **Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Part-UAS** – Issue 1: 9 October 2019.
 5. Opinion 05/2019 – Standard scenarios for UAS operations in the ‘specific’ category – 7 Nov 2019 (Official Publication pending):
 - a) Draft Com Del Reg (EU) ...-... amending Reg 2019/945 as regards the introduction of class C5 and C6 UAS;
 - b) Draft Annex to Draft Com Del Reg (EU) ...-... amending Reg 2019/945 as regards the introduction of class C5 and C6 UAS;
 - c) Draft Com Impl Reg (EU) ...-... amending Reg 2019/947 as regards the adoption of standard scenarios;
 - d) Draft Annex to Draft Com Impl Reg (EU) ...-... amending Reg 2019/947 as regards the adoption of standard scenarios.
 6. EASA Concept paper for certified UAS, certification of UAS in ‘specific’ category & Urban Air Mobility (Issue 2.1) – Nov 2019.



- Does not apply to UAS operated exclusively indoors;
- **DR945 Scope:** certification requirements including CE marking & third-country operators;
- **IR947 Scope:** requirements for operation and registration;
- EASA adopted a **risk-based approach** classifying UAS operations into **3 categories**:

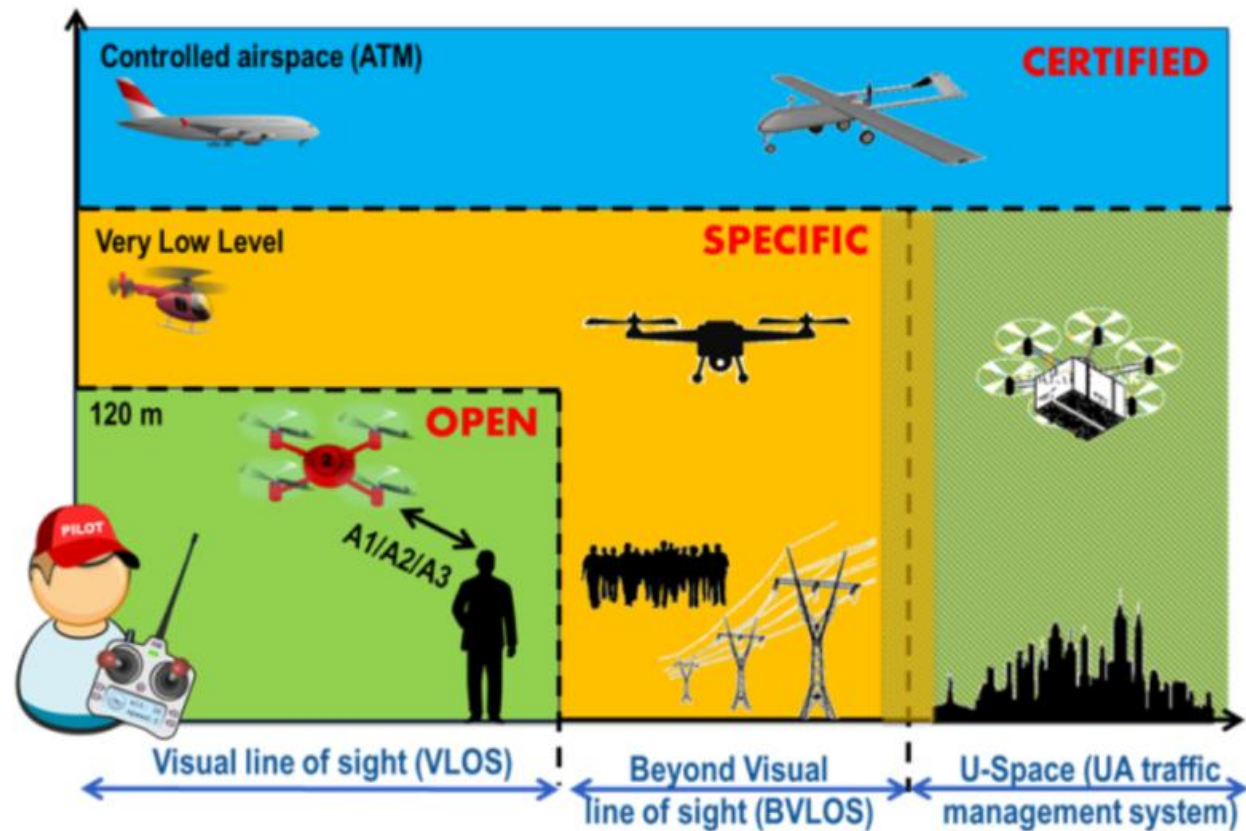
Category	Level of Risk	Safety Assurance
Open	Low	<ul style="list-style-type: none"> • Safety ensured through UA compliance & operational limitations, e.g. MTOM < 25kg, Height < 120m, VLOS; • No prior authorisation before operation;
Specific	Medium	<ul style="list-style-type: none"> • Authorisation by NAA following risk assessment performed by operator;
Certified	High	<ul style="list-style-type: none"> • Requirements compared to manned aviation – certification of aircraft & operator, & licensed remote pilot; • Oversight by NAA & EASA;





UAS CATEGORIES





UAS CATEGORIES

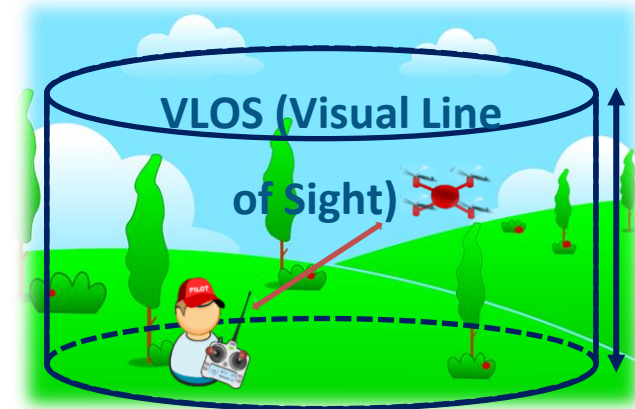
Open



- **Lowest risk;**
- **UA** divided into **5 classes: C0 – C4;**
- **Operations** divided into **3 subcategories: A1 – A3**, on the basis of operational limitations, requirements for the remote pilot and technical requirements for UAS;

Requirements:

- **MTOM < 25 kg;**
- UA does **not** carry dangerous goods;
- UA does **not** drop any material;
- **No autonomous operations;**
- **Remote pilot minimum age 16**, unless supervised (otherwise 12); no min. age for 'toys';
- Remote pilot keeps the UA in **VLOS** at all times except when flying in follow-me mode or when using an observer;
- UA does **not fly over assemblies of people;**
 - additional limitations based on subcategory:
 - A1 fly over people;
 - A2 fly close to people;
 - A3 fly far from people;
- UA is maintained within **120 m** from the closest point of the surface of the earth, except when overflying an obstacle (permission required from entity responsible for obstacle);



Class	Class ID Label	MTOM (kg)	Max. height (m)	Max Dimension (m)	Max Speed (m/s)	Max noise (dBA)	e-ID	Geo-awareness	Lights	Serial No.	CC Backup*
C0		0.25	120	-	19	-	N	N	N	N	N
C1		0.9 (or 80J)	120	-	19	60	Y	Y	Y	Y	Y
C2		4	120	-	-	60	Y	Y	Y	Y	Y
C3		25	120	3	-	-	Y	Y	Y	Y	Y
C4		25	-	-	-	-	-	-	-	-	N

- All classes must be placed on the market with a 1) **user's manual** & 2) **information notice published by EASA with limitations and obligations under EU law**
- Datalink recovery / flight termination. i.e. In case of a C2 link loss have a reliable and predictable method to recover the C2 link or terminate the flight.
- C4 → model aircraft → is **not** capable of **automatic** control mode (pre-programming).



Open Category

Subcategories Summary

Subcategory	Description	Drone Class	MTOM	Pilot competency	Technical Requirements	e-ID	Operator Reg.
A1 – Over People	Uninvolved people but not crowds	C0	< 250 g	• User's manual	• < 19 m/s • Max. height	No	No
		C1	< 900 g	• User's manual • Online training • Online test	• < 19 m/s • Max. height • CC Backup	Yes + Serial No.	Yes
A2 – Close to people	At a safe distance from uninvolved people (30m)	C2	< 4 kg	• User's manual • Online training • Online test • Self-practical training • Theoretical test	• Safe horiz. distance 30m • Max. height • CC Backup	Yes + Serial No.	Yes
A3 – Far from people	Safe distance from urban areas (150 m)	C3	< 25 kg	• User's manual • Online training • Online test	• Safe horiz. distance 150m • Max. height • CC Backup	Yes + Serial No.	Yes
		C4			• No automatic flight	If required	Yes



Operations in A1 shall comply with all of the following conditions:

- 1) UA:
 - a) has **MTOM < 250 g**; or,
 - b) for privately built UAS, has MTOM < 250 g & max. operating speed < 19 m/s;
 - c) is **Class C0**, or
 - d) **C1 with active and updated direct remote identification and geo-awareness systems.**
- 2) UA in point 1d) **reasonably expects that no uninvolved person will be overflown**; for unexpected overflight of uninvolved persons, the time shall be reduced as much as possible;
- 3) Whereas UA in points 1a) to c) above **may overfly uninvolved persons** but shall never overfly assemblies of people;
- 4) When the follow-me mode is active, be conducted up to a **distance of 50 metres from the remote pilot**;
- 5) Remote pilot:
 - a) Is **familiar with the user's manual** provided by the manufacturer of the UAS;
 - b) for class C1 UA, has **completed an online training course followed by completing successfully an online theoretical knowledge examination provided by the competent authority** or by an entity recognised by the competent authority of the Member State of registration of the UAS operator.
The examination shall comprise **40 multiple-choice questions** distributed appropriately across the following subjects: **i. air safety; ii. airspace restrictions; iii. aviation regulation; iv. human performance limitations; v. operational procedures; vi. UAS general knowledge; vii. privacy and data protection; viii. insurance; ix. security.** (*Detailed syllabus in AMC & GM to Part-UAS p.8-11*).



Operations in A2 shall comply with all of the following conditions:

- 1) **UA is class C2 with active and updated direct remote identification and geo-awareness systems;**
- 2) **UA does not overfly uninvolved persons;** at a **safe horizontal distance of at least 30 metres**, to a minimum of 5 metres when using active low speed mode and after evaluation of the situation regarding: (a) weather conditions, (b) performance of the unmanned aircraft, (c) segregation of the involved area.
- 3) **Remote pilot is familiar with the user's manual** provided by the manufacturer of the UAS and **holds a certificate of remote pilot competency** issued by the competent authority or by an entity recognised by the competent authority of the Member State of registration of the UAS operator.

This certificate shall be obtained after complying with all of the following conditions and in the order indicated:

- a) completing an **online training course and passing the online theoretical knowledge examination referred to in subcategory A1** in prev. slide; *(Detailed syllabus in AMC & GM to Part-UAS p.8-11).*
- b) completing a **self-practical training in the operating conditions of subcategory A3** set out in points 2) & 3) in next slide; *(Detailed syllabus in AMC & GM to Part-UAS p.14-17).*
- c) **declaring the completion of the self-practical training defined in point (b) and passing an additional theoretical knowledge examination** provided by the competent authority or by an entity recognised by the competent authority of the Member State of registration of the UAS operator. The examination shall comprise at least **30 multiple-choice questions** aimed at assessing the remote pilot's knowledge of the technical and operational mitigations for ground risk, distributed appropriately across the following subjects: **i. meteorology; ii. UAS flight performance; iii. technical and operational mitigations for ground risk.** *(Detailed syllabus in AMC & GM to Part-UAS p.17-18).*



Operations in A3 shall comply with all of the following conditions:

- 1) UA:
 - a) **MTOM < 25 kg**, in the case of a privately-built UAS, or
 - b) is marked as **class C2** and operated with active and updated direct remote identification and geo-awareness systems; or
 - c) is marked as **class C3** and operated with active and updated direct remote identification and geo-awareness systems; or
 - d) is marked as **class C4**.
- 2) **no uninvolved person will be endangered** during the entire time of the UAS operation;
- 3) at a **safe horizontal distance of > 150 metres** from residential, commercial, industrial or recreational areas;
- 4) **Remote pilot has completed an online training course and passed an online theoretical knowledge examination** as defined in Point 5b) of A1. *(Detailed syllabus in AMC & GM to Part-UAS p.8-11).*



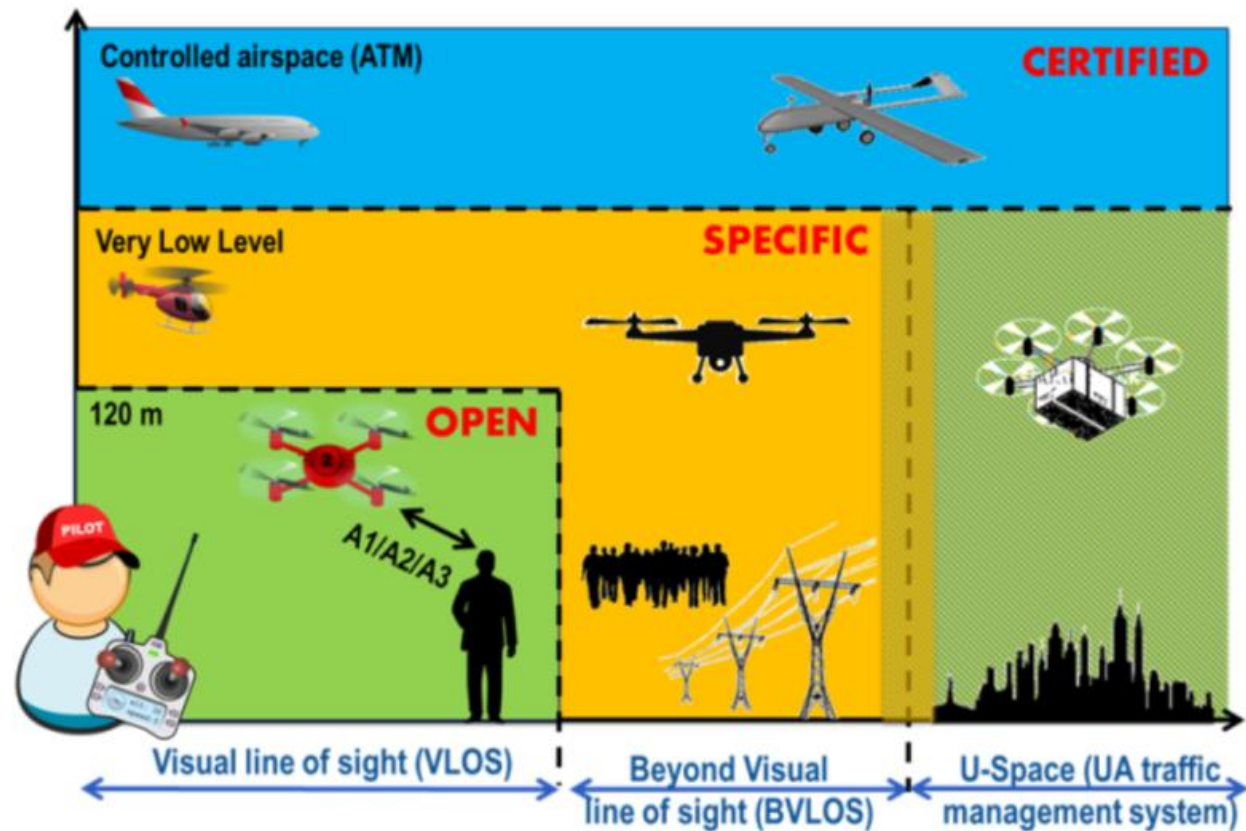
The UAS operator shall comply with all of the following:

- 1) **develop operational procedures** adapted to the type of operation and the risk involved;
- 2) ensure that all operations effectively use and support the efficient use of radio spectrum in order to **avoid harmful interference**;
- 3) **designate a remote pilot** for each UAS operation;
- 4) ensure that the **remote pilots** and all other personnel performing a task in support of the operations are familiar with the **user's manual** provided by the manufacturer of the UAS, and:
 - a) **have appropriate competency in the subcategory** of the intended UAS operations to perform their tasks or, for personnel other than the remote pilot, have completed an on-the-job-training course developed by the operator;
 - b) are fully familiar with the UAS operator's procedures;
 - c) are **provided with the information** relevant to the intended UAS operation concerning any **geographical zones** published by the Member State of operation
- 5) **update the information into the geo-awareness system** when applicable according to the intended location of operation;
- 6) in the case of an operation with an UA in class C0 – C4, ensure that the UAS is:
 - a) accompanied by the corresponding **EU declaration of conformity**, including the reference to the appropriate class; and
 - b) the related **class identification label** is affixed to the unmanned aircraft.
- 7) Ensure in the case of an UAS operation in subcategory **A2 or A3**, that **all involved persons present in the area of the operation have been informed of the risks and have explicitly agreed to participate**.



- 1) Before starting a UAS operation, the remote pilot shall:
 - a) **have the appropriate competency** in the subcategory of the intended UAS operations to perform its task, and **carry a proof of competency** while operating the UAS, except when operating an unmanned aircraft operating in subcategory A1 as long as it is not class C1;
 - b) **obtain updated information** relevant to the intended UAS operation about **any geographical zones** published by the Member State of operation;
 - c) **observe the operating environment**, check the presence of obstacles and, unless operating in subcategory A1 with an UA that is not class C1, check the presence of any uninvolved person;
 - d) **ensure that the UAS is in a condition to safely complete the intended flight**, and if applicable, check if the direct remote identification works properly;
 - e) if the UAS is fitted with an additional payload, verify that its mass does not exceed the MTOM defined by the manufacturer or the MTOM limit of its class.
- 2) During the flight, the remote pilot shall:
 - a) **not perform duties under the influence of psychoactive substances or alcohol** or when it is unfit to perform its tasks due to **injury, fatigue, medication, sickness** or other causes;
 - b) **keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace** surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property;
 - c) **comply with the operational limitations** in geographical zones;
 - d) have the ability to **maintain control of the UA**, except in the case of a lost link or when operating a free-flight UA;
 - e) **operate the UAS in accordance with the user's manual** provided by the manufacturer, including any applicable limitations;
 - f) **comply with the operator's procedures** when available.
- 3) During the flight, remote pilots and UAS operators shall not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.
- 4) For the purposes of point (2)(b), remote pilots may be assisted by an unmanned aircraft observer, situated alongside them, who, by unaided visual observation of the unmanned aircraft, assists the remote pilot in safely conducting the flight. Clear and effective communication shall be established between the remote pilot and the unmanned aircraft observer.





UAS CATEGORIES

Specific



Ref. IR947, L152/49-50,64-65.

- Where one of the requirements for 'Open' is not met, the operation is categorised as '**Specific**', e.g. BVLOS; or Altitude > 120m; MTOM > 25kg; in urban environment with MTOM > 4kg or UA without CE mark; for dropping material.
- The UAS operator shall obtain an **Operational Authorisation (OA)** from the national competent authority of the Member State of registration prior to commencing an operation, except in the following 2 cases:
 - 1) for operations conducted in the framework of **authorised model aircraft clubs and associations**; or
 - 2) the UAS operator holds a **Light UAS Operator Certificate (LUC)** with the appropriate privileges.
- The UAS operator shall perform and submit an **operational risk assessment** in accordance with IR947/Art.11; or
- alternatives to carrying out a full risk assessment are offered to UAS operators:
 - 1) for UAS operations with **lower intrinsic risks**, an **Operational Declaration** may be submitted when the **operations comply with the Standard Scenarios (STSs)** listed in Appendix 1 to the UAS Regulation;
 - 2) for other UAS operations, a request for **authorisation** may be submitted based on the mitigations and provisions described in the **Predefined Risk Assessment (PDRA)** when the UAS operation meets the operational characterisation described in AMC2 to Article 11 to the UAS Regulation.



- The competent authority shall issue an **operational authorisation** in accordance with IR947/Art.12 when it concludes that the operation meets the following conditions:
 - a) all required information is provided;
 - b) a procedure is in place for coordination with the relevant service provider for the airspace if any part of the operation is to be conducted in controlled airspace.

The **competent authority shall specify in the OA the exact scope of the authorisation and the duration.**

- The OA remains valid as long as the UAS operator remains compliant with the relevant requirements of this Regulation and with the conditions defined in the operational authorisation. **Upon revocation or surrender of the OA the UAS operator shall provide an acknowledgment in digital format that must be returned to the competent authority without delay.**
- UAS operators shall notify, without any delay, the competent authority of **any change to the information** contained in the operational declaration that they submitted. The UAS operator shall submit an application for an **updated OA if there are any significant changes** to the operation or to the mitigation measures listed in the OA.
- OAs are not transferable.

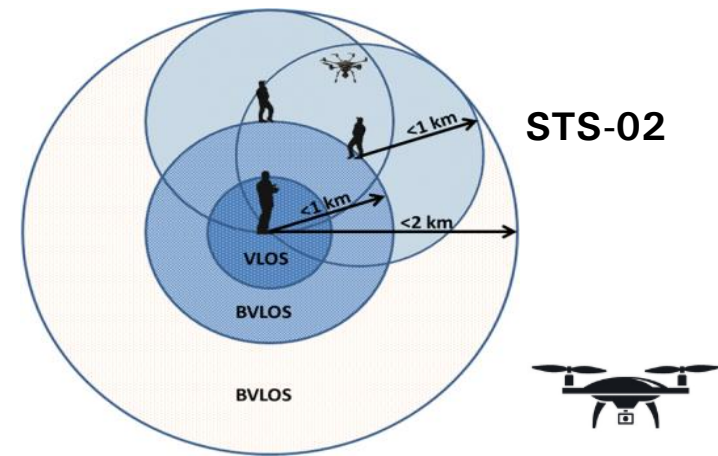
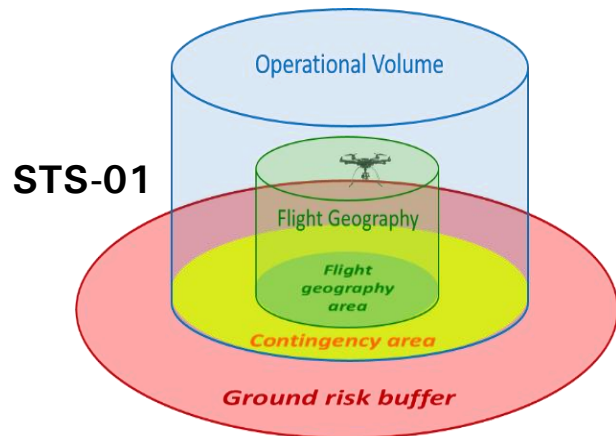


Specific Category

Standard Scenarios

- Two new **CE classes, C5 and C6**, are established for UAS to be used in the 'specific' category under the conditions determined respectively by standard scenarios STS-01 and STS-02 as defined in the proposed amendment to Implementing Regulation (EU) 2019/947:
 - STS-01 – VLOS over a controlled ground area in a populated environment;**
 - STS-02 – BVLOS with Visual Observers (VO) over a controlled ground area in a sparsely populated environment.**

STS	Range (from remote pilot)	Overflown Area	Airspace	Max. flight height	UA
STS-01	VLOS	Controlled ground area in populated env.	Controlled / Uncontrolled	120 m above earth surface	<ul style="list-style-type: none"> Class C5 ≤3 m; ≤25 kg No fixed wing
STS-02	No VO: ≤ 1 km VO: ≤ 2 km	Controlled ground area in sparsely populated env.	Controlled / Uncontrolled	120 m above earth surface	<ul style="list-style-type: none"> Class C6 ≤3 m; ≤25 kg; ≤50 m/s (≤34kJ)



- Classes C5 & C6 have same **technical requirements** as class **C3** UAS with addition of:
 - **Health monitor of the C2 link;**
 - Provide information on **UA speed and height;**
 - **Flight Termination system;**
 - **Optional geo-awareness;**



C5

5

- No fixed wings;
- Means to reduce the effect of the UA dynamics (i.e. Parachute);
- Accessories kit to transform a class C3 UAS;

C6

6

- Provide information on UA position;
- Maximum ground speed < 50 m/s;
- Geo-caging;
- Low speed mode selectable up to 5 m/s;
- Automatic modes;



- While STSs are described in a detailed way, the **provisions and mitigations** in the **PDRA** are described in a **generic way to provide flexibility to UAS operators and the competent authorities** to enable **adapting to the intended operations**.
- The PDRA is the result of applying the **operational risk assessment** methodology (AMC1 to Article 11) to UAS operations performed in the 'specific' category with the following main attributes:
 - 1) UA with **max. characteristic dimensions < 3 m** & typical **K.E. < 34 kJ**;
 - 2) operated **BVLOS** of the remote pilot with visual air risk mitigation;
 - 3) over **sparsely populated areas**;
 - 4) **< 150 m (500 ft) above the overflown surface** (or any other altitude reference defined by the state); and
 - 5) in **uncontrolled airspace**.



Specific Category

Current PDRAs

Ref. AMC&GM to IR947/AMC2 Art.11.

PDRA	Range (from remote pilot)	Overflown Area	Airspace	Max. flight height	UAS	SORA	JAR US
PDRA-01	BVLOS with visual air risk mitigation	Sparsely populated	Uncontrolled	Operational volume up to 150 m above earth surface	≤ 3 m ≤ 34 kJ	N/A	STS-01
PDRA-02	BVLOS	Sparsely populated	Temporary flight restriction zone	As per zone	≤ 3 m ≤ 34 kJ	GRC 3, ARC-a; SAIL II	02
PDRA-03	Based on EU STS-01 (VLOS)					GRC 2, ARC-b SAIL II	03
PDRA-04	BVLOS – “short” range	“Local” sparsely populated	Initially “atypical”	e.g. ≤ 30 m	≤ 3 m ≤ 34 kJ	GRC 3, ARC-a SAIL II	04
PDRA-05	Limited by direct RLOS (UA control station)	Pre-defined route over sparsely populated area	Uncontrolled/controlled (TBC) Supported by services	≤ 150 m	≤ 3 m ≤ 34 kJ	GRC 2, ARC-b SAIL II	05



Requirements for operational declaration

The UAS operator may submit an **operational declaration of compliance with a standard scenario** (defined in Appendix 1) to the competent authority of the Member State of operation for operations:

- a) of unmanned aircraft with:
 - i. Max. **characteristic dimension** < 3 m in **VLOS** over **controlled ground area** except over assemblies of people,
 - ii. Max. **characteristic dimension** < 1 m in **VLOS** except over assemblies of people;
 - iii. Max. **characteristic dimension** < 1 m in **BVLOS** over **sparsely populated areas**;
 - iv. Max. **characteristic dimension** < 3 m in **BVLOS** over **controlled ground area**.
- b) performed < 120 m from the surface of earth, and:
 - i. in **uncontrolled airspace (class F or G)**, or
 - ii. in **controlled airspace** after coordination and individual flight authorisation in accordance with published procedures for the area of operation.

Info in operational declaration

A declaration of UAS operators shall contain:

- a) administrative information about the UAS operator;
- b) a statement that the operation satisfies the operational requirements above and a standard scenario as defined in Appendix 1;
- c) the commitment of the UAS operator to comply with the relevant mitigation measures required for the safety of the operation, including the associated instructions for the operation, for the design of the unmanned aircraft and the competency of involved personnel;
- d) confirmation by the UAS operator that an appropriate insurance cover will be in place for every flight made under the declaration, if required by Union or national law.



Requirements to be submitted by operator

The application for an **operational authorisation** shall be based on the **risk assessment** (Article 11) and shall include in addition the following information:

- a) the **registration number of the UAS operator**;
- b) the name of the **accountable manager** or the name of the UAS operator in the case of a natural person;
- c) the **operational risk assessment**;
- d) the list of **mitigation measures proposed by the UAS operator**, with sufficient information for the competent authority to assess the adequacy of the mitigation means to address the risks;
- e) an **operations manual when required** by the risk and complexity of the operation;
- f) a **confirmation that an appropriate insurance cover will be in place** at the start of the UAS operations, if required by Union or national law.

Authorisation submitted by the Competent Authority

The operational authorisation granted by the competent authority shall detail:

- a) the **scope of the authorisation**;
- b) the '**specific**' **conditions that shall apply**: i. to the UAS operation and the operational limitations; ii. to the required competency of the UAS operator and, where applicable, of the remote pilots; iii. to the technical features of the UAS, including the certification of the UAS, if applicable;
- c) the following **information**: i. the registration number of the UAS operator and the technical features of the UAS; ii. a reference to the operational risk assessment developed by the UAS operator; iii. the operational limitations and conditions of the operation; iv. the mitigation measures that the UAS operator has to apply; v. the location(s) where the operation is authorised to take place; vi. all documents and records relevant for the type of operation and the type of events that should be reported in addition to those defined in Regulation (EU) No 376/2014 of the European Parliament and of the Council.



Cross-border operations or operations outside the state of registration

- For UAS operations in the 'specific' category for which **an operational authorisation has already been granted**, which are intended to take place **partially or entirely in the airspace of a Member State other than the Member State of registration**, the UAS operator shall provide the competent authority of the **Member State of intended operation** with an application including the following information:
 - a) a **copy of the OA granted to the UAS operator**; and
 - b) the **location(s) of the intended operation including the updated mitigation measures, if needed**, to address those risks which are specific to the local airspace, terrain and population characteristics and the climatic conditions.
- Upon receipt of the application, the competent authority of the **Member State of intended operation shall assess it without undue delay and provide the competent authority of the Member State of registration and the UAS operator with a confirmation that the updated mitigation measures are satisfactory** for the operation at the intended location.
- Upon receipt of that confirmation, the UAS operator may start the intended operation and the **Member State of registration shall record the updated mitigation measures that the UAS operator has to apply in the operational authorisation.**



The UAS operator shall comply with all of the following:

- a) **establish procedures and limitations adapted to the type of the intended operation and the risk involved**, including:
 - i. operational procedures to ensure the safety of the operations;
 - ii. procedures to ensure that security requirements applicable to the area of operations are complied with in the intended operation;
 - iii. measures to protect against unlawful interference and unauthorised access;
 - iv. procedures to ensure that all operations are in respect of Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. In particular it shall carry out a data protection impact assessment, when required by the National Authority for data protection in application of Article 35 of Regulation (EU) 2016/679;
 - v. guidelines for its remote pilots to plan UAS operations in a manner that minimises nuisances, including noise and other emissions-related nuisances, to people and animals.
- b) designate a remote pilot for each operation or, in the case of autonomous operations, ensure that during all phases of the operation, responsibilities and tasks are properly allocated in accordance with the procedures established;
- c) ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid harmful interference;



- d) ensure that before conducting operations, remote pilots comply with all of the following conditions:
- i. have the competency to perform their tasks in line with the applicable training identified by the operational authorisation or, if point UAS.SPEC.020 applies, by the conditions and limitations defined in the appropriate standard scenario listed in Appendix 1 or as defined by the LUC;
 - ii. follow remote pilot training which shall be competency based and include the competencies set out in paragraph 2 of Article 8;
 - iii. follow remote pilot training, as defined in the operational authorisation, for operations requiring such authorisation, it shall be conducted in cooperation with an entity recognised by the competent authority;
 - iv. follow remote pilot training for operations under declaration that shall be conducted in accordance with the mitigation measures defined by the standard scenario;
 - v. have been informed about the UAS operator's operations manual, if required by the risk assessment and procedures established in accordance with point (a);
 - vi. obtain updated information relevant to the intended operation about any geographical zones;
- e) ensure that personnel in charge of duties essential to the UAS operation, other than the remote pilot itself, comply with all of the following conditions:
- i. have completed the on-the-job-training developed by the operator;
 - ii. have been informed about the UAS operator's operations manual, if required by the risk assessment, and about the procedures established in accordance with point (a);
 - iii. have obtained updated information relevant to the intended operation about any geographical zones;



- f) carry out each operation within the limitations, conditions, and mitigation measures defined in the declaration or specified in the operational authorisation;
- g) keep a record of the information on UAS operations as required by the declaration or by the operational authorisation;
- h) use UAS which, as a minimum, are designed in such a manner that a possible failure will not lead the UAS to fly outside the operation volume or to cause a fatality. In addition, man-machine interfaces shall be such to minimise the risk of pilot error and shall not cause unreasonable fatigue;
- i) maintain the UAS in a suitable condition for safe operation by:
 - i. as a minimum, defining maintenance instructions and employing an adequately trained and qualified maintenance staff; and
 - ii. complying with point UAS.SPEC.100 (certified equipment & UA), if required;
 - iii. using an UA which is designed to minimise noise and other emissions, taking into account the type of the intended operations and geographical areas where the aircraft noise and other emissions are of concern.



Ref. IR947 L152/51,66,67.

- 1) Remote pilots shall have at least the following competencies: (a) ability to apply operational procedures (normal, contingency and emergency procedures, flight planning, pre-flight and post-flight inspections); (b) ability to manage aeronautical communication; (c) manage the unmanned aircraft flight path and automation; (d) leadership, teamwork and self-management; (e) problem solving and decision-making; (f) situational awareness; (g) workload management; (h) coordination or handover, as applicable.
- 2) The remote pilot shall: (a) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes; (b) have the appropriate remote pilot competency as defined in the operational authorisation, in the standard scenario defined in Appendix 1 or as defined by the LUC and carry a proof of competency while operating the UAS.
- 3) Before starting an UAS operation, the remote pilot shall comply with all of the following: (a) obtain updated information relevant to the intended operation about any geographical zones defined in accordance with Article 15; (b) ensure that the operating environment is compatible with the authorised or declared limitations and conditions; (c) ensure that the UAS is in a safe condition to complete the intended flight safely, and if applicable, check if the direct remote identification works properly; (d) ensure that the information about the operation has been made available to the relevant air traffic service (ATS) unit, other airspace users and relevant stakeholders, as required by the operational authorisation or by the conditions published by the Member State for the geographical zone of operation in accordance with Article 15.
- 4) During the flight, the remote pilot shall: (a) comply with the authorised or declared limitations and conditions; (b) avoid any risk of collision with any manned aircraft and discontinue a flight when continuing it may pose a risk to other aircraft, people, animals, environment or property; (c) comply with the operational limitations in geographical zones defined in accordance with Article 15; (d) comply with the operator's procedures; (e) not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.



- A legal person is eligible to apply for a **Light UAS Operator Certificate (LUC)**.
- An **UAS operator who applies for an LUC shall establish, implement and maintain a safety management system** corresponding to the size of the organisation, and nature and complexity of its activities, which determine the hazards and associated risks.
- An application for an LUC or for an amendment to an existing LUC shall be submitted to the competent authority.
- If satisfied that the UAS operator complies with the requirements, the competent authority shall issue an LUC and:
 - a) **specify the terms and conditions of the privilege** granted to the UAS operator in the LUC; and
 - b) within the terms of approval, **grant to an LUC holder the privilege to authorise its own operations without:**
 - i. **submitting an operational declaration;**
 - ii. **applying for an operational authorisation.**



- The LUC shall include:
 - a) the **UAS operator identification**;
 - b) the **UAS operator's privileges**;
 - c) **authorised type(s) of operation**;
 - d) the **authorised area, zone or class of airspace for operations**, if applicable;
 - e) **any special limitations or conditions**, if applicable;
- After an LUC is issued, the following **changes require prior approval by the competent authority**:
 - a) any **change in the terms of approval of the UAS operator**;
 - b) any **significant change** to the elements of the **LUC holder's safety management system**.
- An LUC shall **be issued for an unlimited duration**. It shall **remain valid subject to**:
 - a) the **LUC holder's continuous compliance with the relevant requirements** of this Regulation and of the Member State that issued the certificate; and
 - b) it **not being surrendered or revoked**. Upon revocation or surrender of an LUC, the LUC holder shall provide an **acknowledgment in digital format that must be returned to the competent authority without delay**.
- Except for the change to the ownership of the organisation, approved by the competent authority, **an LUC is not transferable**.



An application for an LUC or for an amendment to an existing LUC shall be submitted to the competent authority and shall contain all of the following information:

- a) a description of the UAS operator's management system, including its organisational structure and safety management system;
- b) the name(s) of the responsible UAS operator's personnel, including the person responsible for authorising operations with UASs;
- c) a statement that all the documentation submitted to the competent authority has been verified by the applicant and found to comply with the applicable requirements.

An LUC holder shall provide the competent authority with an LUC manual describing directly or by cross reference its organisation, the relevant procedures and the activities carried out.



The LUC holder shall:

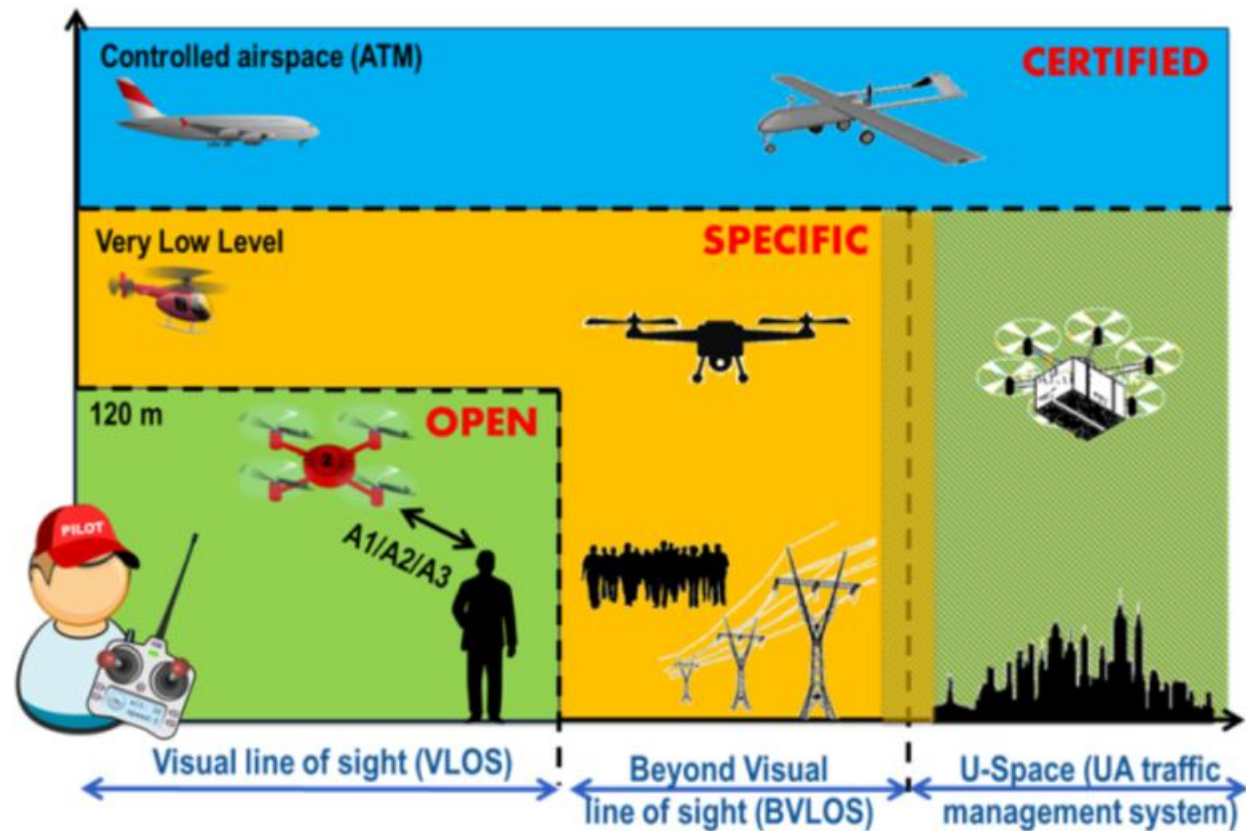
- 1) comply with the requirements;
- 2) comply with the scope and privileges defined in the terms of approval;
- 3) establish and maintain a system for exercising operational control over any operation conducted under the terms of its LUC;
- 4) carry out an operational risk assessment of the intended operation in accordance with Article 11 unless conducting an operation for which an operational declaration is sufficient;
- 5) keep records of the following items in a manner that ensures protection from damage, alteration and theft for a period at least 3 years for operations conducted using the privileges specified: the operational risk assessment, when required, and (a) its supporting documentation; (b) mitigation measures taken; and (c) the qualifications and experience of personnel involved in the UAS operation, compliance monitoring and safety management;
- 6) keep personnel records referred to in point 5(c) as long as the person works for the organisation and shall be retained until 3 years after the person has left the organisation.



Ref. IR947 L152/51; AMC & GM to IR947, GM1/Art9.

- The **minimum age for remote pilots** operating a UAS in the 'open' and 'specific' category shall be **16 years**.
- **No minimum age** for remote pilots shall be required:
 - when they operate in **subcategory A1 with a UAS Class C0 that is a 'toy'**;
 - for **privately-built UAS with MTOM < 250 g**;
 - when they operate **under the direct supervision of a remote pilot** (who must **comply with the minimum age requirement**).
- **MS may lower the minimum age** following a risk-based approach taking into account specific risks associated with the operations in their territory:
 - for remote pilots operating in the '**open**' category **by up to 4 years**;
 - for remote pilots operating in the '**specific**' category **by up to 2 years**.
- Where a MS lowers the minimum age for remote pilots, those remote pilots shall only be allowed to operate a UAS on the territory of that MS.
- **MS may define a different minimum age** for remote pilots operating in the framework of **model aircraft clubs or associations**.
- Since the supervisor and the young remote pilot must both demonstrate competency to act as a remote pilot, **no minimum age is defined to conduct the training and pass the test** to demonstrate the minimum competency to act as a remote pilot in the 'open' category.





UAS CATEGORIES

Certified





- Requires:
 - 1) **certification of aircraft,**
 - 2) **certification of the operator, and**
 - 3) **licensing of remote pilots;**
- UAS operations are **always considered to be in the 'certified' category** when they:
 - 1) are conducted **over assemblies of people** with a UA with **characteristic dimensions $\geq 3\text{m}$** ; or
 - 2) involve the **transport of people**; or
 - 3) involve the **carriage of dangerous goods** that may result in a high risk for third parties in the event of an accident (e.g. not in crash-protected container etc.).
- A UAS operation belongs to the 'certified' category when, based on the risk assessment, the competent authority considers that the risk cannot be mitigated adequately without the:
 - 1) certification of the **airworthiness of the UAS;**
 - 2) certification of the UAS operator; and
 - 3) licensing of the remote pilot, unless the UAS is fully autonomous.
- N.B.: **flying over assemblies of people with a UAS with characteristic dimension $< 3\text{ m}$ may be in the 'specific' category unless the risk assessment concludes that it is in the 'certified' category.**





TASKS OF MEMBER STATES



- Main Responsibilities:
 1. Designation of Competent Authority;
 2. Defining UAS geographical zones;
 3. Registration of UAS operators and certified UAS;
 4. Authorising operations in the specific category;
 5. Grant privileges to LUC holders;
 6. Issue Remote Pilot Certificates & maintaining a database of Remote Pilots;
 7. Market Surveillance;
 8. Defining Insurance Requirements*;



- **Each Member State shall designate one or more entities as the Competent Authority**
 - Where a Member State designates more than one entity as a Competent Authority it shall:
 - a) clearly define the areas of competence of each competent authority in terms of responsibilities;
 - b) establish appropriate coordination mechanism between those entities to ensure the effective oversight of all organisations and persons subject to this Regulation.
 - **Member States may also designate an entity as a Competent Authority only for specific tasks.** It should be highlighted that in such a case, this entity must comply with Article 62(3) of Regulation (EU) 2018/1139 (independent, transparent, with necessary resources & capabilities) and is the one that will be audited by EASA under Article 85 (monitoring of Member State) of the same Regulation.
 - **The competent authority should employ personnel able to verify that the UAS operations conducted in such areas are safe.** However, since the issues that are likely to occur more often will be related to noise, privacy and security, this role may best be fulfilled by law enforcement authorities. **Law enforcement authorities may take different forms depending on the Member State's national legal framework.**



- **General**
 - enforcing this Regulation;
 - making available in a common unique digital format information on **UAS geographical zones** identified by the Member States and **established within the national airspace** of its State;
 - providing **UAS operators with information and guidance that promotes the safety of UAS operations**;
 - **establishing and maintaining registration systems for UAS whose design is subject to certification and for UAS operators** whose operation may present a risk to safety, security, privacy, and protection of personal data or the environment;
 - **identify and publish the contact point** for accessing and exercising the rights in accordance with Regulation (EU) 2016/679 on the **protection of natural persons with regard to the processing & free movement of personal data**.
- **Open category**
 - issuing remote pilots with a proof of completion of an **online theoretical knowledge examination** and issuing, amending, suspending, limiting or revoking **certificates of competency of remote pilots**;
 - **implement a system to detect and examine incidents of non-compliance reported by UAS operators** (only in case the incident resulted in a fatal or serious injury to a person or it involved an aircraft other than unmanned aircraft).



Specific category

- **issue remote pilots** with a **proof of completion/ certificate of remote pilot/license** as per risk assessment;
- **issue, amend, suspend, limit or revoke operational authorisations;**
- **verify completeness of declarations;**
- **issue, amend, suspend, limit or revoke LUCs;**
- **keep documents, records and reports of all of the above;**
- **develop a risk-based oversight system** for:
 - UAS operators that have submitted a declaration or hold an operational authorisation or an LUC;
 - model clubs and associations that hold an authorisation;
- **establish audit planning** based on the risk profile, compliance level and the safety performance of UAS operators who have submitted a declaration, or hold a certificate issued by the competent authority;



Specific category (cont.)

- carry out **inspections** with regard to UAS operators who have submitted a declaration or hold a certificate, inspecting UAS and ensuring that UAS operators and remote pilots comply with this Regulation;
- implement a system to detect and examine **incidents of non-compliance** reported by UAS operators (in case of non certified UAS: only in case the incident resulted in a fatal or serious injury to a person or it involved an aircraft other than unmanned aircraft);
- should **establish an online system** for the submission of operational declarations, which provides the submitter with an automatic acknowledgement of receipt when the submission has been successful. In order to facilitate cross-border operations, the acknowledgement of receipt should be written at least in English, in addition to the language of the Member State. [Ref. AMC & GM to IR947/Art.12(5)]
 - A formula such as the following may be used: ‘The {name of the competent authority} acknowledges the receipt of the declaration submitted by {name of the UAS operator and UAS operator registration number}, on {date of submission of the declaration} related to the STS {identification of the STS}. The declaration has been found to be complete.’



Certified category

- issue, suspend or revoke **certificates of UAS operators and licenses of remote pilots** operating within the 'certified' category;
- **establish audit planning** based on the risk profile, compliance level and the safety performance of UAS operators who have submitted a declaration, or hold a certificate issued by the competent authority;
- carry out **inspections** with regard to UAS operators who have submitted a declaration or hold a certificate, inspecting UAS and ensuring that UAS operators and remote pilots comply with this Regulation.



The competent authority should keep **at least the following documentation, for at least 3 years after their validity date expires:**

1. Operational Authorisations

- the initial application for an authorisation;
- the application(s) for updated operational authorisations;
- the final version of the risk assessment performed by the UAS operator, and the supporting material;
- the UAS operator's statement confirming that the intended UAS operation complies with any applicable EU and national rules relating to it, in particular with regard to privacy, data protection, liability, insurance, security and environmental protection;
- the procedures to ensure that all operations comply with Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data;
- confirmation by the competent authority of the Member State of operation that the updated mitigation measures are satisfactory for the operation at the intended location;
- when applicable, a procedure for coordination with the relevant service provider for the airspace if the entire operation, or part of it, is to be conducted in controlled airspace;
- up-to-date operational authorisation(s) with a table outlining successive cl



2. Operational Declarations

- up-to-date declarations with a table outlining successive changes;
- up-to-date confirmations of receipt and completeness, provided in accordance with Article 12(5)(b) of the UAS Regulation, with a table outlining successive changes;

3. Remote Pilots' Competency

- proof of competency for remote pilots that have passed the online theoretical knowledge examination;
- certificates of remote pilot competency for remote pilots that have passed the examination, with the declaration of completion of the practical self-training provided by the remote pilot;
- proof of competency or other certificates for remote pilots, as required by the STSs as defined in Appendix 1 to the UAS Regulation or the operational authorisations;

4. Light UAS Operator Certificates

- initial applications;
- applications for amendments to an existing LUC, and the associated documents;
- up-to-date terms of approval, with a table outlining the successive changes.



- The **competent authorities of the Member States** and market surveillance and control authorities shall **cooperate on safety matters** and establish procedures for the efficient exchange of safety information.
 - Cooperation should be organised **primarily at the Member State level**.
 - All the competent authorities concerned should make the best use of the information systems defined in Articles 22 'Exchange of information – Community Rapid Information System' and 23 'General information support system' of Regulation (EC) No 765/2008, as well as of the occurrence-reporting system of Regulation (EU) No 376/2014.
- **EASA and the competent authorities shall collect, analyse and publish safety information concerning UAS operations in their territory** in accordance with Article 119 of Regulation (EU) 2018/1139 and its implementing acts.
 - **Each UAS operator shall report to the competent authority on any safety-related occurrence** and exchange information regarding its UAS in compliance with Regulation (EU) No 376/2014.
 - Upon receiving such information, the **Agency & the competent authority shall take the necessary measures to address any safety issues on the best available evidence & analysis, taking into account interdependencies between the different domains of aviation safety, & between aviation safety, cyber security and other technical domains of aviation regulation.**
 - Where the competent authority or the Agency takes these measures, it shall **immediately notify all relevant interested parties and organisations that need to comply with those measures** in accordance with Regulation (EU) 2018/1139 and its implementing acts.



- Member States are responsible for **defining the geographical zones** for UAS operators.
- For safety, security, privacy or environmental reasons, **Member States may:**
 - a) **Prohibit, request particular conditions or request a prior operational authorisation for certain or all UAS operations;**
 - b) **subject UAS operations to specified environmental standards;**
 - c) **allow access to certain UAS classes only;**
 - d) **allow access only to UAS equipped with certain technical features, e.g. remote identification systems or geo awareness systems.**

Areas sensitive to some/all types of UAS operations include gatherings of people, hospitals, penal institutions, industrial plants, government authorities, etc.

- On the basis of a risk assessment carried out by the competent authority, **Member States may designate certain geographical zones in which UAS operations are exempt from one or more of the 'open' category requirements and/or where the operational limitations are extended, including mass or height limitation.**
- **With applicability from July 2021, Member States shall ensure that the information on the UAS geographical zones, including their period of validity, is made publicly available in a common unique digital format.**
- **Member states are allowed to modify the low flying rule to suit their jurisdiction.**



- **UAS operators shall register themselves:**
 - when operating within the ‘open’ category any of the following unmanned aircraft:
 - with a **MTOM ≥ 250 g**, or, which in the case of an impact can transfer to a human **kinetic energy > 80 Joules**;
 - that is equipped with a **sensor able to capture personal data**, unless it is a ‘toy’ (Directive 2009/48/EC).
 - when operating within the ‘specific’ category an unmanned aircraft of **any mass**;
 - **in the Member State where they have their residence for natural persons or where they have their principal place of business for legal persons** and ensure that their registration information is accurate; → A UAS operator cannot be registered in more than one Member State at a time.
 - **Member States shall issue a unique digital registration number for UAS operators and for the UAS that require registration, allowing their individual identification.**
- **Member States shall establish and maintain accurate registration systems for UAS whose design is subject to certification and for UAS operators whose operation may present a risk to safety, security, privacy, and protection of personal data or environment.**

These **national registration systems** should:

- be **digital, harmonised, interoperable national registration systems**, allowing competent authorities to **access and exchange that information** (through the Repository of Info specified in Regulation (EU) 2018/1139, Art.74.);
- comply with the applicable Union and national law on **privacy and processing of personal data**.



UAS Operators

The registration systems for UAS operators shall provide the fields for introducing and exchanging the following information:

- the full name and the date of birth for natural persons and the name and their identification number for legal persons;
- the address of UAS operators;
- their email address and telephone number;
- an insurance policy number for UAS if required by Union or national law;
- the confirmation by legal persons of the following statement: 'All personnel directly involved in the operations are competent to perform their tasks, and the UAS will be operated only by remote pilots with the appropriate level of competency;
- operational authorisations and LUCs held and declarations.

Certified Unmanned Aircraft

The registration systems for unmanned aircraft whose design is subject to certification shall provide the fields for introducing and exchanging the following information:

- manufacturer's name;
- manufacturer's designation of the unmanned aircraft;
- unmanned aircraft's serial number;
- full name, address, email address and telephone number of the natural or legal person under whose name the unmanned aircraft is registered.

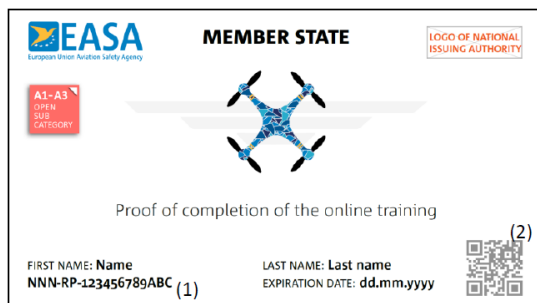


1. Upon request by a model aircraft club or association, the competent authority may **issue an authorisation for UAS operations in the framework of model aircraft clubs and associations.**
2. The authorisation shall be issued in accordance with any of the following:
 - a) relevant national rules;
 - b) established procedures, organisational structure and management system of the model aircraft club or association, ensuring that:
 - i. remote pilots operating in the framework of model aircraft clubs or associations are informed of the conditions and limitations defined in the authorisation issued by the competent authority;
 - ii. remote pilots operating in the framework of model aircraft clubs or associations are assisted in achieving the minimum competency required to operate the UAS safely and in accordance with the conditions and limitations defined in the authorisation;
 - iii. the model aircraft club or association takes appropriate action when informed that a remote pilot operating in the framework of model aircraft clubs or associations does not comply with the conditions and limitations defined in the authorisation, and, if necessary, inform the competent authority;
 - iv. the model aircraft club or association provides, upon request from the competent authority, documentation required for oversight and monitoring purposes.
3. The authorisation shall **specify the conditions** under which operations in the framework of the model aircraft clubs or associations may be conducted and shall be **limited to the territory of the Member State in which it is issued.**
4. Member States may enable model aircraft clubs and associations to register their members into the registration systems established in accordance with Article 14 on their behalf; otherwise the members shall register themselves.

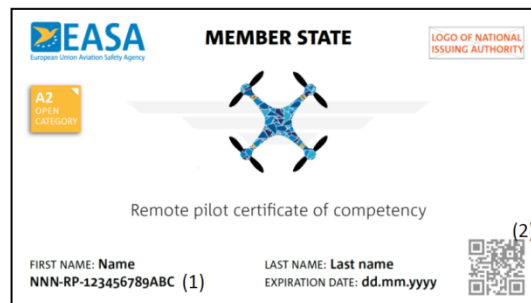


For UAS operations in the 'open' and 'specific' categories, the MS should provide the remote pilot with the following, which **may be in electronic form**:

- for **subcategories A1 & A3**, the MS should provide the **proof of completion in Fig.(a)** upon receipt of proof of a remote pilot passing the **online theoretical examination**; this is **valid for 5 years**;
- for **subcategory A2**, the MS should provide the **certificate of competency in Fig.(b)** after verification that the applicant has passed the **online theoretical knowledge examination**, has completed and declared the **self-practical training** and passed the **additional theoretical knowledge** examination provided by the competent authority or by an entity recognised by the competent authority.



(a)



(b)

- 1) Insert the identifier provided by the authority releasing the proof of completion, in the following format:
 - **NNN-RP-xxxxxxxx**, where:
 - **NNN** is the ISO 3166 Alpha-3 code of the MS releasing the proof of completion (**MLT** for Malta);
 - **RP** is a fixed field meaning: remote pilot; and
 - **xxxxxxxx** are **12 alphanumeric characters (lower-case only)** defined by the **MS** releasing the proof of completion.
- 2) QR code providing a link to the national database where the information related to the remote pilot is stored. Through the 'remote pilot identifier' number (1) all information related to the training of the remote pilot can be retrieved.



- **No insurance is mandated by EASA for drones.**
 - Regulation (EC) 785/2004 mandates an insurance for **model aircraft > 20 kg**;
 - it may be assumed this also applies to **drones > 20kg**;
- **Insurance for drones < 20 kg** needs to be covered by **national regulation**.
 - through ANO etc.
- Insurance types:
 - 1) **liability insurance** → covers **claims from 3rd parties** including bodily injury/property damage;
 - 2) **hull insurance** → covers damage to or loss of **drone**; may include payload, mounted equipment etc.
- The **registration database** includes a field for the insurance number.





TASKS OF MEMBER STATES



Market Surveillance

Ref. "Ensuring product conformity under EU Harmonisation Legislation" presentation by DG-GROW – Nov 2019.

- Set-up according to the New Legislative Framework made of two main legislations establishing the building blocks of the Single Market
 - 1) **Regulation (EC) 765/2008** establishes the following mechanisms:
 - a) **Accreditation**: ensures that conformity assessment bodies have the technical capacity to perform their duties;
 - b) **Market surveillance**: checks that products on the EU market complies with requirements;
 - c) **CE marking**: signifies that products have been assessed to meet all the applicable requirements;
 - 2) **Decision 768/2008** provides a template for harmonisation legislations
 - a) Obligations of economic operators;
 - b) Conformity assessment procedures;
 - c) Presumption of conformity provided by harmonized standards;
 - d) Notification of conformity assessment bodies;
 - e) Safeguard procedure (framework to coordinate market surveillance actions at EU level).
- Updated by **Regulation (EU) 2019/1020** on **market surveillance** and **compliance of products**

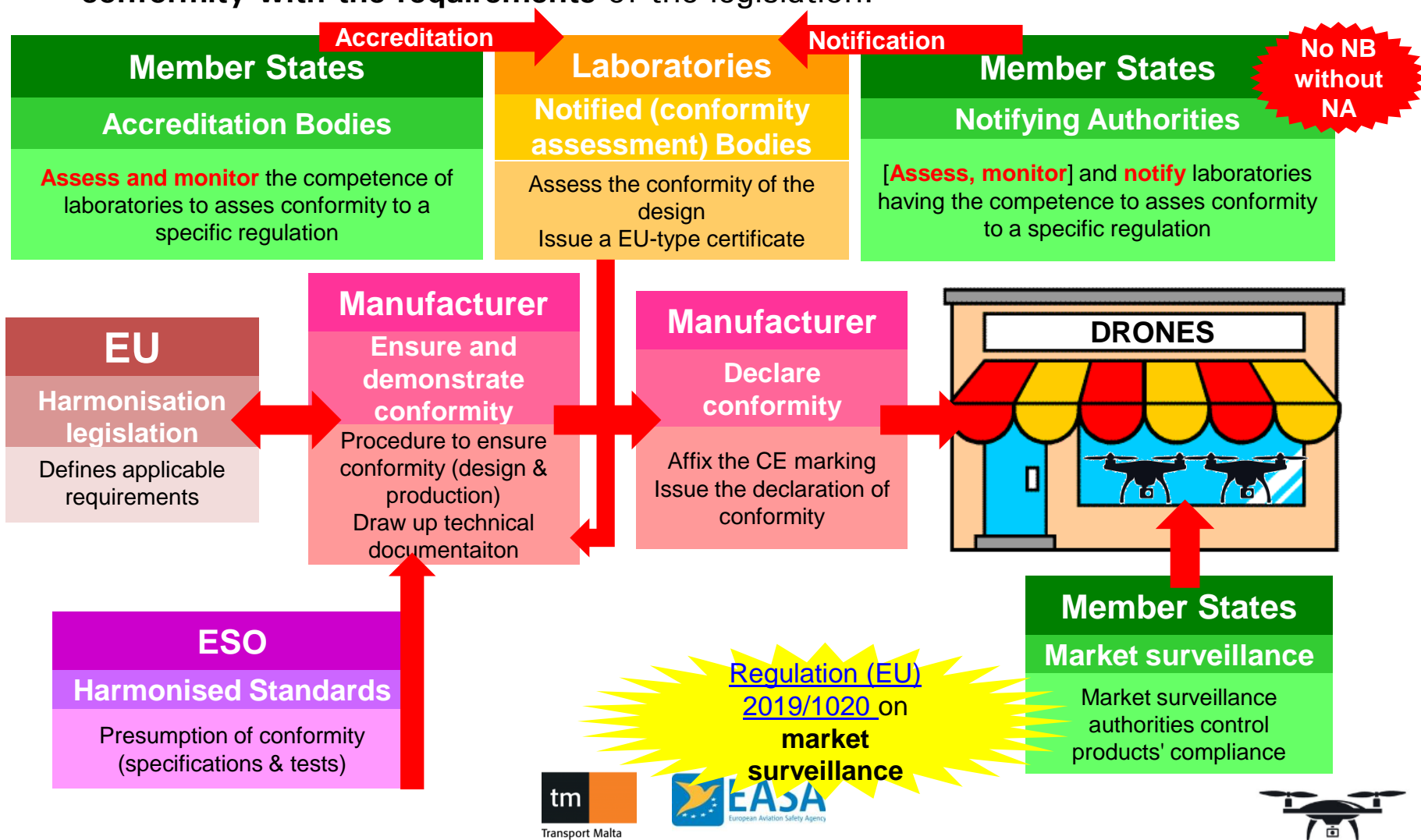


Market Surveillance

Overview

Ref. "Ensuring product conformity under EU Harmonisation Legislation" presentation by DG-GROW – Nov 2019.

- MS are responsible to ensure that products placed on the EU market are in conformity with the requirements of the legislation.



Ref. "Ensuring product conformity under EU Harmonisation Legislation" presentation by DG-GROW – Nov 2019.

- To this end, **MS must nominate**:
 - 1) **An authority responsible for the market surveillance** under a specific EU legislation;
 - 2) **a Notifying Authority** that will:
 - **Assess the competence of conformity assessment bodies** (based on accreditation);
 - **Notify approved conformity assessment bodies**;
 - **Monitor** the competence of **Notified Bodies**;
- **Tasks of the Authorities**
 - Establish a **risk-based surveillance plan**;
 - **Control** products placed on the market (online and offline);
 - Ensure that economic operators take appropriate **corrective actions** when needed;
 - Take measures when the economic operator fails to take corrective actions (**withdrawal, recall, sanctions, etc.**);
- **Role of Notified Bodies**
 - Module B:
 - assess conformity of the design (production not covered);
 - issue type certificate;
 - Module H:
 - assess manufacturer's quality system;
 - issue quality system approval;



- This Regulation should apply to **any UAS intended to be operated in the 'open' category that is new to the Union market**, whether a **new UAS** made by a manufacturer established in the **Union** or a **new or second-hand UAS** imported from a third country.
- **MS shall organise and perform surveillance and control of products placed on Union market as per Reg (EC) No 765/2008***.
 - **MS shall ensure that their market surveillance and border control authorities cooperate with the competent authorities** designated under Art.17 of IR947 on **safety matters and shall establish appropriate communication and coordination mechanisms** between them;
 - **Member States should take the necessary steps to ensure that UAS intended to be operated in the 'open' category are made available on the market and put into service only where they do not compromise the health and safety of persons, domestic animals or property, when normally used.**
- **Economic operators should be responsible for the compliance of UAS** intended to be operated in the 'open' category with the requirements laid down in this Regulation, in relation to **their respective roles in the supply & distribution chain.**

**Updated by Regulation (EU) 2019/1020 on market surveillance and compliance of products*



- **Conformity assessment of UAS** intended to be operated in the 'open' category should **remain solely the obligation of the manufacturer**.
 - **Manufacturers shall draw up the technical documentation provided for in Article 17** and carry out the relevant **conformity assessment procedure** referred to in Article 13 or have it outsourced.
 - Where conformity assessment procedure demonstrates compliance of the product with the requirements, **manufacturers shall draw up an EU declaration of conformity and affix the CE marking**.
 - Manufacturers shall keep the technical documentation and the EU declaration of conformity for **10 years** after the product has been placed on the market.
 - Manufacturers shall ensure that the **product is accompanied by the manual and information notice** in a language which can be easily understood by consumers and other end-users, as determined by the Member State concerned.
- **Any economic operator that either places a UAS** intended to be operated in the 'open' category **on the market under his own name or trademark, or modifies a UAS** intended to be operated in the 'open' category in such a way that compliance with the applicable requirements may be affected, **should be considered to be the manufacturer and should assume the obligations of the manufacturer**.
- Market surveillance authorities and UAS operators should have easy access to the EU declaration of conformity. In order to fulfil this requirement, **manufacturers should ensure that each UAS** intended to be operated in the 'open' category is accompanied either by a **copy of the EU declaration of conformity or by the internet address** at which the EU declaration of conformity can be accessed.



- **Importers & Distributors**

- An importer or distributor shall be considered a manufacturer for the purposes of this Chapter and shall be **subject to the obligations of manufacturers where they place a product on the market under their name or trademark or modify the product** already placed on the market in such a way that compliance with this Chapter may be affected.
- Distributors and importers, being close to the market place, **should be involved in market surveillance tasks** carried out by the competent national authorities, and should be prepared to participate actively, providing those authorities with all the necessary information relating to the UAS intended to be operated in the 'open' category.

- **Distributors**

- The distributor who makes a UAS intended to be operated in the 'open' category available on the market should act with due care to ensure that its **handling of the product does not adversely affect its compliance.**



- **Importers**

- **Importers shall only place products compliant with the requirements set out in the Regulation.**
- **Before placing a product on the Union market, importers shall ensure that:**
 - the appropriate **conformity assessment procedure** (Article 13) has been carried out by the manufacturer;
 - the manufacturer has drawn up the **technical documentation** referred to in Article 17;
 - the product bears the **CE marking and, when required, the UA class identification label and the indication of the sound power level**;
 - the product is accompanied by the **documents required** (paragraphs 7 & 8 of Article 6);
 - the manufacturer has complied with the **requirements** set out in paragraphs 5 and 6 of Article 6.
- **When placing on the market a UAS intended to be operated in the ‘open’ category, every importer should indicate on the UAS his name, registered trade name or registered trademark and the address at which they can be contacted;**



- Where the **market surveillance authorities** of one Member State have taken action pursuant to Article 20 of Regulation (EC) No 765/2008(*), or where they have sufficient reason to believe that a product presents a risk to the health or safety of persons or to other aspects of public interest protection, they shall carry out an **evaluation** in relation to the product concerned. The relevant economic operators shall cooperate as necessary with the market surveillance authorities for that purpose.
- Where the market surveillance authorities find that the product does not comply with the requirements they shall, without delay, **require the relevant economic operator to take all appropriate corrective actions to bring the product into compliance** with those requirements, to **withdraw** the product from the market, or to **recall** it within a reasonable period, commensurate with the nature of the risk, as they may prescribe. The market surveillance authorities shall **inform the relevant notified body** accordingly.
- Where the relevant economic operator does not take adequate corrective action within the stipulated period, the **market surveillance authorities shall take all appropriate provisional measures to prohibit or restrict** the product being made available on their national market, to **withdraw** the product from that market or to **recall** it. The market surveillance authorities shall **inform the Commission and the other Member States**, without delay, of those measures.

**Updated by Regulation (EU) 2019/1020 on market surveillance and compliance of products*



- **Member States other than the Member State initiating the procedure** under this Article shall, without delay, **inform the Commission and the other Member States of any measures adopted and of any additional information** at their disposal relating to the non-compliance of the product concerned, and, in the event of disagreement with the adopted national measure, of their objections.
- If the national measure is considered justified, **all Member States shall take the necessary measures** to ensure that the non-compliant product is withdrawn or recalled from their market, and shall **inform the Commission** accordingly. If the national measure is considered unjustified, the Member State concerned shall withdraw that measure.
- Where the product presents a risk, **manufacturers shall immediately inform the market surveillance authorities of the Member States in which they made the product available on the market** to that effect, giving details, in particular, of the non-compliance, of any corrective measures taken and of the results thereof.



- To enable **economic operators to demonstrate** and the **competent authorities to ensure** that UAS intended to be operated in the 'open' category made available on the market **comply with the essential requirements**, it is necessary to provide for **conformity assessment procedures**, as set out in Decision No 768/2008/EC(*).
- Some UAS classes intended to be operated in the 'open' category require the intervention of conformity assessment bodies.
- A conformity assessment body shall be **established under national law of a Member State and have legal personality**.
- A conformity assessment body **shall submit an application for notification to the notifying authority of the Member State in which it is established**.
- Conformity assessment bodies **shall take out liability insurance unless liability is assumed by the Member State in accordance with national law, or the Member State itself is directly responsible for the conformity assessment**.
- **Member States shall notify the Commission and the other Member States of bodies authorised to carry out third-party conformity assessment tasks.**



- **Member States shall designate a notifying authority** that shall be responsible for setting up and carrying out the necessary procedures **for the assessment and notification of conformity assessment bodies and the monitoring of notified bodies**.
- **Member States shall inform the Commission of their procedures for the assessment and notification of conformity assessment bodies and the monitoring of notified bodies**, and of any changes thereto.
- **Member States may decide that this assessment and monitoring shall be carried out by a national accreditation body** within the meaning of Regulation (EC) No 765/2008*.
 - Where the notifying authority delegates or otherwise entrusts this assessment, notification or monitoring to a body which is not a governmental entity, that body shall be a legal entity and shall comply mutatis mutandis with the requirements laid down in Article 20. In addition, it shall have arrangements to cover liabilities arising out of its activities. In this case, the notifying authority shall take full responsibility for the tasks performed by the body it has delegated to.
- **Notifying authorities shall notify conformity assessment bodies to the Commission and the other Member States using the electronic notification tool** developed and managed by the Commission. The notifying authority shall notify the Commission and the other Member States of any subsequent relevant changes to the notification.
- Where a notifying authority has ascertained or has been informed that **a notified body no longer meets the requirements**, or that it fails to fulfil its obligations, the notifying authority shall **restrict, suspend or withdraw the notification** as appropriate, depending on the seriousness of the failure to meet those requirements or fulfil those obligations. It shall **immediately inform the Commission and the other Member States accordingly**.
 - In the event of restriction, suspension or withdrawal of the notification, or where the notified body has ceased its activity, the notifying Member State shall take appropriate steps to ensure that the files of that body are either processed by another notified body or kept available for the responsible notifying and market surveillance authorities at their request.





U-SPACE



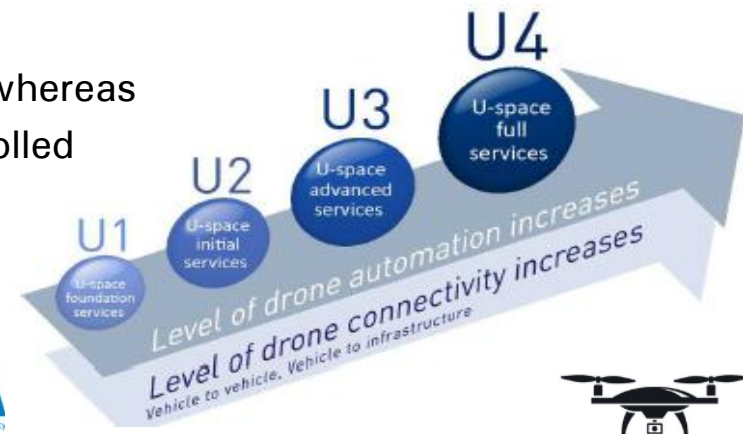
- U-Space is “a set of services designed to support safe, efficient and secure access to airspace for large numbers of drones”
 - highly reliant on digitisation, automation of functions and the integrity of **data(bases)**, even for signals not coming from U-space but used by it (e.g. GNSS).



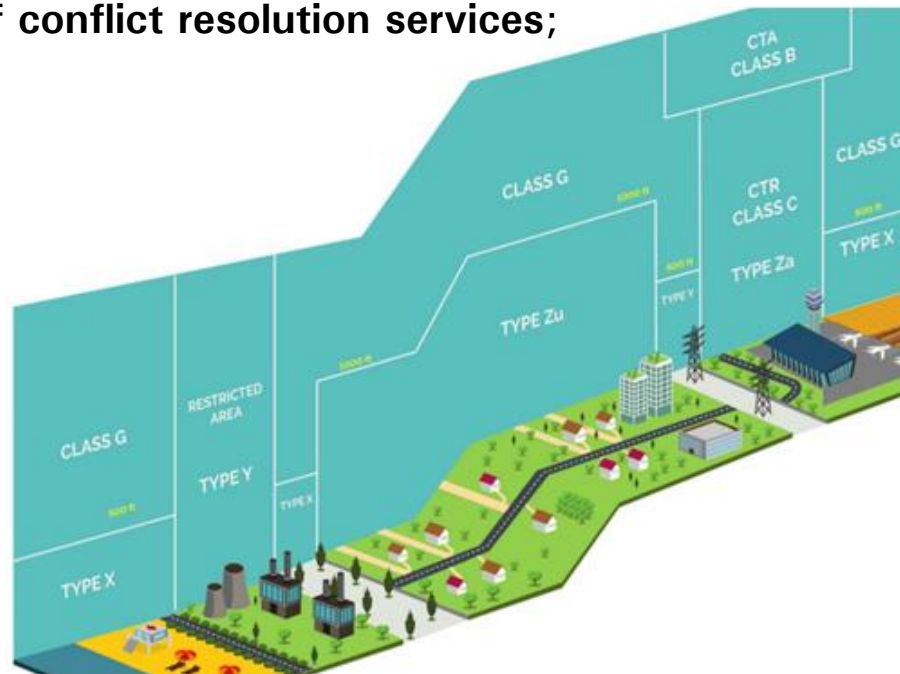
- The lightest possible involvement of the regulator would be to oversee a purely commercial deployment of U-space so as to ensure its safe operation. The fact that ATM already exists and may offer closely related services, or the lack of commercial viability of such an approach (at least at first) may lead to a hybrid approach with the state taking a larger role.



- Carried out in **4 steps, U1 to U4**, each comprising a set of services, as follows:
 - U1: Foundation services** providing **e-registration, e-identification and geo-fencing**.
 - U2: Initial services** supporting the **management of drone operations** and may include flight planning, flight approval, tracking, airspace dynamic information and procedural interfaces with air traffic control.
 - U3: Advanced Services** supporting **more complex operations in dense areas** and may include capacity management and assistance for conflict detection. Indeed, the availability of automated 'Detect and Avoid' functionalities, in addition to more reliable means of communication, will lead to a significant increase of operations in all environments.
 - U4: Full services**, particularly services **offering integrated interfaces with manned aviation**, support the full operational capability of U-space, and rely on a very high level of automation, connectivity and digitalisation for both the drone and U-space system.
- N.B. **U1 to U3 comprise services in VLL airspace**, whereas U4 is the full integration of drone flights into controlled airspace and is beyond the scope of the docs.



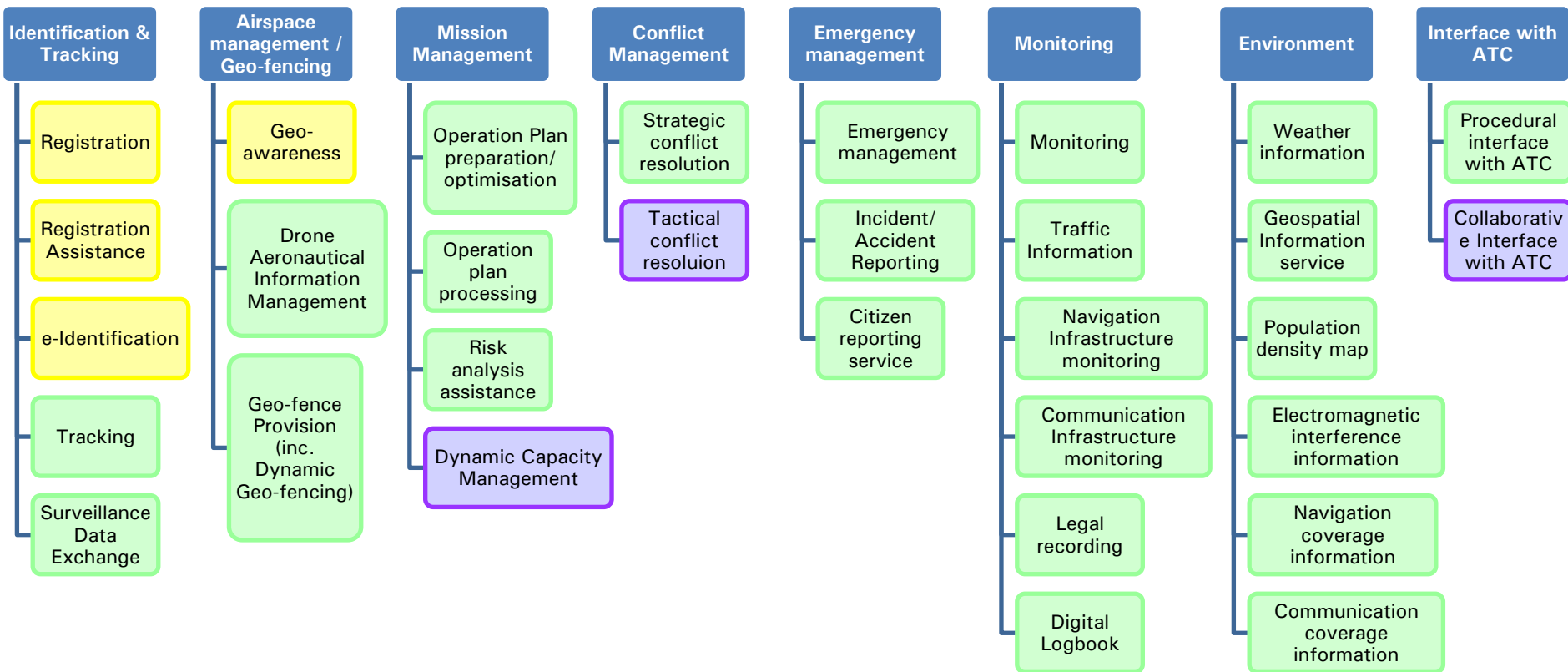
- **VLL is divided into 3 different types of volume: X, Y, Z:**
 - Where **X** is lowest risk, **Z** is highest risk;
 - Based on differences in the numbers of drone flights expected, ground risk, air risk, etc.;
 - Differing in the **services offered** and hence the **types of operation** which are possible, and their access and entry requirements; most significantly in the **provision of conflict resolution services**;



Type	Characteristics	Ref. U-Space ConOps,p.10.
X	<ul style="list-style-type: none">• No conflict resolution service;• Few basic requirements on the operator, pilot or the drone;• The pilot is responsible for collision avoidance with all aircraft;• VLOS & EVLOS flights are easily possible;• Other flight modes (e.g. BVLOS) can only enter if the air risk is mitigated;	
Y	<ul style="list-style-type: none">• Will be available from U2;• strategic (pre-flight) conflict resolution and usually traffic information during flight;• Facilitates VLOS, EVLOS and BVLOS flight.• Requires:<ol style="list-style-type: none">1. An approved operation plan;2. A pilot trained for Y operation;3. A remote piloting station connected to U-Space;4. A drone & remote piloting station capable of position reporting when available.	
Z	<ul style="list-style-type: none">• strategic and tactical (in-flight) conflict resolution;• Will be available from U3;• Allows VLOS & EVLOS;• Facilitates BVLOS and automatic drone flight;• Subdivided into:<ol style="list-style-type: none">1. Za – normal airspace controlled by ATM; immediately available;2. Zu – controlled by UTM; available from U1;• Requires:<ol style="list-style-type: none">1. An approved operation plan;2. A pilot trained for Z operation and/or a compatible, connected automatic drone;3. A remote piloting station connected to U-Space;4. A drone & remote piloting station capable of position reporting.	



Ref. U-Space ConOps Draft (Sep 2019),p.56.



U1

U2

U3



- The U-space services used in the volumes have different states:
 - **Mandated (M)**: The service **must be provided** in the volume and **must be used** by any drone operator flying in that volume;
 - **Offered (Of)**: The service **must be provided** in the volume and **may be used** by any drone operator flying in that volume;
 - **Optional (Op)**: The service **may be provided** in the volume and **may be used** by any drone operator flying in that volume.
 - **When-available (Wa)**: The service **may be provided** in the volume and when provided **must be used** by any drone operator flying in that volume.
 - **No (N)**: Not available.
- **Short term restrictions may be imposed in any volume;**
 - are announced via the **Emergency Management Service**;
 - are visible in the **Drone Aeronautical Information** and the **Geo-awareness** data.
 - However, a drone operator in an X volume not connected to U-space will not be aware of this restriction → this risk needs to be resolved.



U-Space Service	Description	X	Y	Z
Registration	Interaction with the registrar to enable the registrations of the drone, its owner, its operator, and its pilot. Entails a secure and high availability registry (data store), with appropriate means available for different classes of user to input/update their own data or (when permitted) query the contents of the registry.	M	M	M
Registration assistance	Provides assistance to people undertaking the registration process.			
e-Identification	e-Identification enables information about the drone and other relevant information to be verified without physical access to the manned aircraft. 2 implementations: 1). Direct Remote Identification (DRID) – a drone capability relating to the broadcast of an identifying signal with the intention that it is received on some (portable) device nearby. 2). Network Remote Identification (NRID) - a process allowing someone using a (portable) device which is able to detect the current position of the drone to consult the tracking data of U-space, identify the relevant track and obtain equivalent identification information.	M	M	M



Ref. U-Space ConOps,p.16.

U-Space Service	Description	X	Y	Z
Geo-awareness	<p>This provides geo-fence and other flight restriction information to drone pilots and operators.</p> <p>Comprises a map of a country or region showing geo-fences, or flight relevant information which indicates at each moment how close the drone is to any geo-fence and issues warnings when appropriate.</p> <ul style="list-style-type: none">• In U1, it adds info from NOTAMs, temporary and drone-specific restrictions from CAA and Drone Aeronautical Info Management Service if/when available.• In (or by) U2, the service adds inputs from the Drone Aeronautical Information Management service, including Short Term Restrictions, which can produce geo-fences with immediate effect.	M	M	M



A direct remote identification add-on shall comply with the following:

1. allows the upload of the UAS operator registration number in accordance with Article 14 of Implementing Regulation (EU) 2019/947 and exclusively following the process provided by the registration system;
2. has a physical serial number compliant with standard ANSI/CTA-2063 *Small Unmanned Aerial Systems Serial Numbers*, affixed to the add-on and its packaging or its user's manual in a legible manner;
3. ensures, in real time during the whole duration of the flight, the direct periodic broadcast from the UA using an open and documented transmission protocol, of the following data, in a way that they can be received directly by existing mobile devices within the broadcasting range:
 - i. the UAS operator registration number;
 - ii. the unique physical serial number of the add-on compliant with standard ANSI/CTA-2063;
 - iii. the geographical position of the UA and its height above the surface or take-off point;
 - iv. the route course measured clockwise from true north and ground speed of the UA; and
 - v. the geographical position of the remote pilot or, if not available, the take-off point;
4. ensures that the user cannot modify the data mentioned under paragraph (3) points ii, iii, iv and v;
5. is placed on the market with a user's manual providing the reference of the transmission protocol used for the direct remote identification emission and the instruction to: (a) install the module on the UA; (b) upload the UAS operator registration number;



Ref. U-Space ConOps,p.16.

U-Space Service	Description	X	Y	Z
Drone Aeronautical Information Management	The drone equivalent of the Aeronautical Information Management Service. This service maintains the map of X, Y and Z airspaces, and permanent and temporary changes to it. This service provides information to the geo-fencing services as well as operational planning preparation service.	M	M	M
Tracking and position reporting	Receives location reports, fuses multiple sources and provides tracking information about drone movements.	Op	Wa	M
Surveillance data exchange	Exchanges data between the tracking service and other sources or consumers of tracks – radar, other drone trackers, etc.			
Geo-fence provision (incl. dynamic geo-fencing)	An enhancement of geo-awareness that allows geo-fence changes to be sent to drones immediately. The drone must have the ability to request, receive and use geo-fencing data.	M	Wa	M
Operation plan preparation/optimisation	Provides assistance to the operator in filling of an operation plan. This service functions as the interface between the drone operator and the operation plan processing service.			



Ref. U-Space ConOps,p.16.

U-Space Service	Description	X	Y	Z
Operation plan processing	A safety-critical, access-controlled service that manages live operation plans submitted via the operation plan preparation service and checks them against other services. The service manages authorization workflows with relevant authorities, and dynamically takes airspace changes into account.	Op	M	M
Risk analysis assistance	Provides a risk analysis, mainly for Specific operations, combining information from other services – drone AIM, environment, traffic information, etc. this can also be used by insurance services.			
Strategic conflict resolution	Checks for possible conflicts in a specific operation plan, and proposes solutions, during operational plan processing.	N	M	M
Emergency Management	Provides assistance to a drone pilot experiencing an emergency with their drone, and communicates emerging information to interested parties.	Wa	Wa	M
Accident/Incident Reporting	A secure and access-restricted system that allows drone operators and others to report incidents and accidents, maintaining reports for their entire life-cycle. A similar citizen-access service is possible.	M	M	M



U-Space Service	Description	X	Y	Z
Monitoring	Provides monitoring alerts (preferably audible) about the progress of a flight (e.g. conformance monitoring, weather compliance monitoring, ground risk compliance monitoring, electromagnetic monitoring).	Op	Wa	M
Traffic Information	Provides the drone pilot or operator with information about other flights that may be of interest to the drone pilot; generally where there could be some risk of collision with the pilot's own aircraft.	Op	Wa	M
Navigation Infrastructure Monitoring	Provides status information about navigation infrastructure during operations. This service should give warnings about loss of navigation accuracy.			
Communication Infrastructure Monitoring	Provides status information about communication infrastructure during operations. The service should give warnings about degradation of communication infrastructure.			
Digital Logbook	Produces reports for a user based on their legal recording information.	Wa	Wa	M



U-Space Service	Description	X	Y	Z
Legal recording	A restricted-access service to support accident and incident investigation by recording all input to U-space and giving the full state of the system at any moment. A source of information for research and training.	Wa	Wa	Wa
Weather information	Collects and presents relevant weather information for the drone operation including hyperlocal weather information when available/required.	M	M	M
Geospatial Information service	Collects and provides relevant terrain map, buildings, obstacles – with different levels of precision – for the drone operation.	Op	Op	Wa
Population density map	Collects and presents a population density map for the drone operator to assess ground risk. This could be proxy data e.g. mobile telephone density.	Op	Op	Wa
Electromagnetic interference information	Collects and presents relevant electromagnetic interference information for the drone operation.	Op	Op	Wa



U-Space Service	Description	X	Y	Z
Navigation coverage information	Provides information about navigation coverage for missions that will rely on it. This information can be specialized depending on the navigation infrastructure available (e.g. ground or satellite based).	Op	Op	Wa
Communication Coverage Information	Provides information about communication coverage for missions that will rely on it. This information can be specialized depending on the communication infrastructure available (e.g. ground or satellite based).	Op	Op	Wa
Procedural interface with ATC	A mechanism invoked by the operation plan processing service for coordinating the entry of a flight into controlled airspace before flight. Through this, ATC can either accept or refuse the flight and can describe the requirements and process to be followed by the flight.	Wa	Wa	M



U-Space Service	Description	X	Y	Z
Dynamic Capacity Management	Responsible for balancing traffic demand and capacity constraints during operational plan processing.	N	Wa	M
Tactical Conflict Resolution	Checks for possible conflicts in real time and issues instructions to aircraft to change their speed, level or heading as needed.	N	N	M
Collaborative Interface with ATC	Offers verbal or textual communication between the remote pilot and ATC when a drone is in a controlled area. This service replaces previous ad-hoc solutions and enables flights to receive instructions and clearances in a standard and efficient manner.	Wa	Wa	M





NEXT STEPS

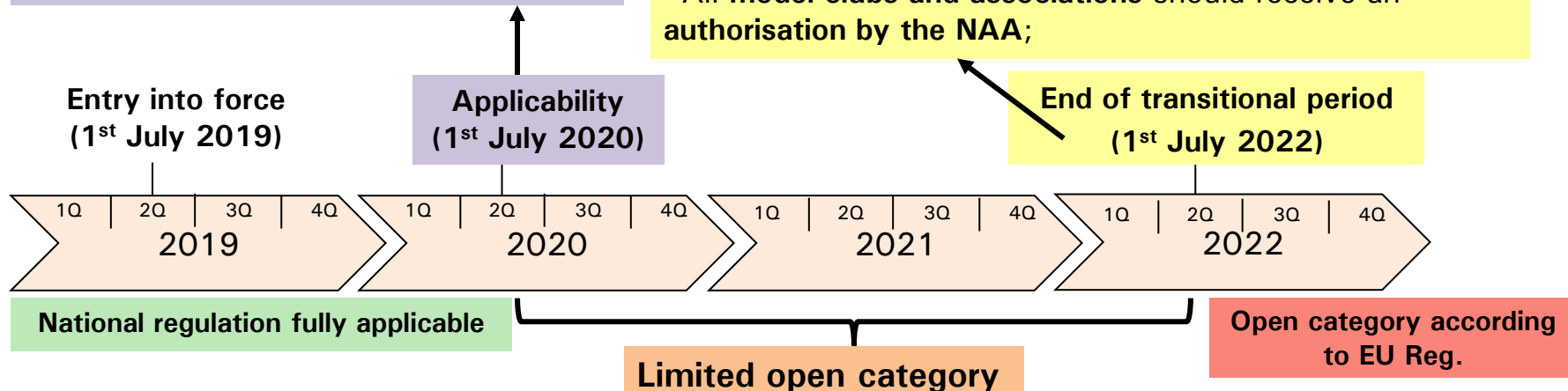


Next Steps

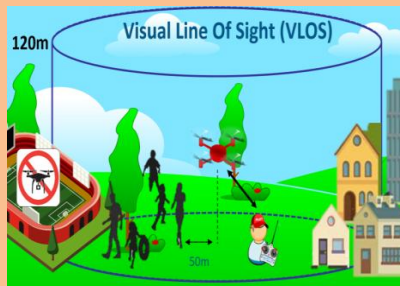
Timeline

- All UAS operators shall register themselves and register certified UAS;

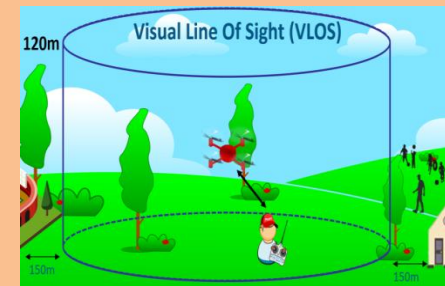
- All UAS to be operated in **open category** are put on the market with the **CE mark**;
- UAS without **CE marking**, purchased before this date, can still be operated in **subcategory A1 and A3** [IR947, Art. 20];
- All **model clubs and associations** should receive an authorisation by the **NAA**;



- UAS with MTOM < 500 g may operate in subcategory A1;



- UAS with MTOM < 2 kg may be operated at a minimum horizontal distance of 50 m from people;

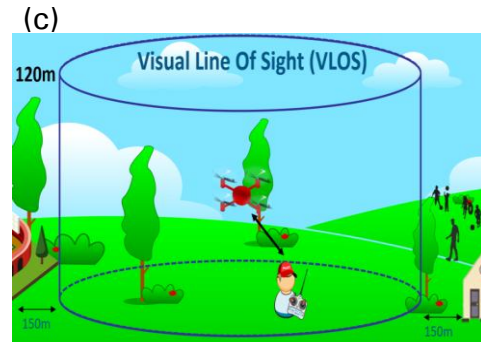
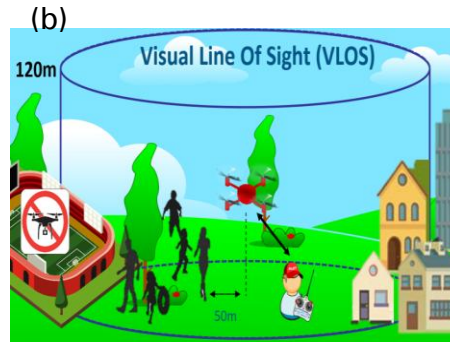
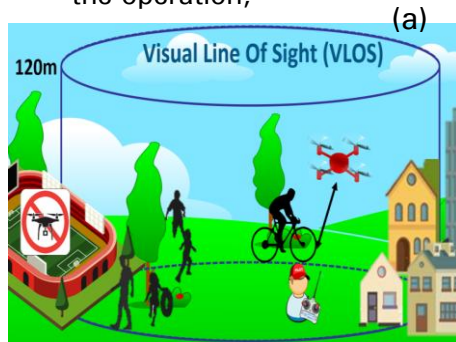


- UAS with MTOM < 25kg may be operated in subcategory A3;



Ref. <https://www.easa.europa.eu/easa-and-you/civil-drones-rpas#0>.

- **June 2020:**
 - **Registration of UAS operators & certified drones becomes mandatory.**
 - Starting from June 2020 all drone operators shall register themselves before using a drone:
 - In the 'Open' category, with a weight of:
 - i. > 250 g, or
 - ii. < 250 g if it is not a toy and is equipped with a sensor able to capture personal data;
 - In the 'specific' category;
 - **All certified drones** (operated in high risk operations) shall be registered as well. The registration number needs to be displayed on the drone.
 - Operations in the 'Specific' category may be conducted after the authorisation given by the National Aviation Authority. Based on:
 - the risk assessment and procedures defined by the EU Regulation;
 - Predefined risk assessment published by EASA as an AMC.
 - Drone user can start operating in **limited 'Open' category (until June 2022):**
 - a) Drones with a mass < 500 g may be operated in an area where reasonably it is expected that no uninvolved person is overflown;
 - b) Drones with mass < 2 kg may be operated up to 50 m horizontal distance from people;
 - c) Drones with mass < 25 kg may be operated at 150 m horizontal distance of residential, recreational and industrial areas, in a range where reasonably it is expected that no uninvolved person is overflown during the entire time of the operation;



Ref. <https://www.easa.europa.eu/easa-and-you/civil-drones-rpas#0>.

- **June 2021:**

- National authorisations, certificates, declarations are fully converted to the new EU system
 - Member states need to complete the definition of geographical zones where drones are forbidden or where special authorisation is needed.
 - i.e. 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.

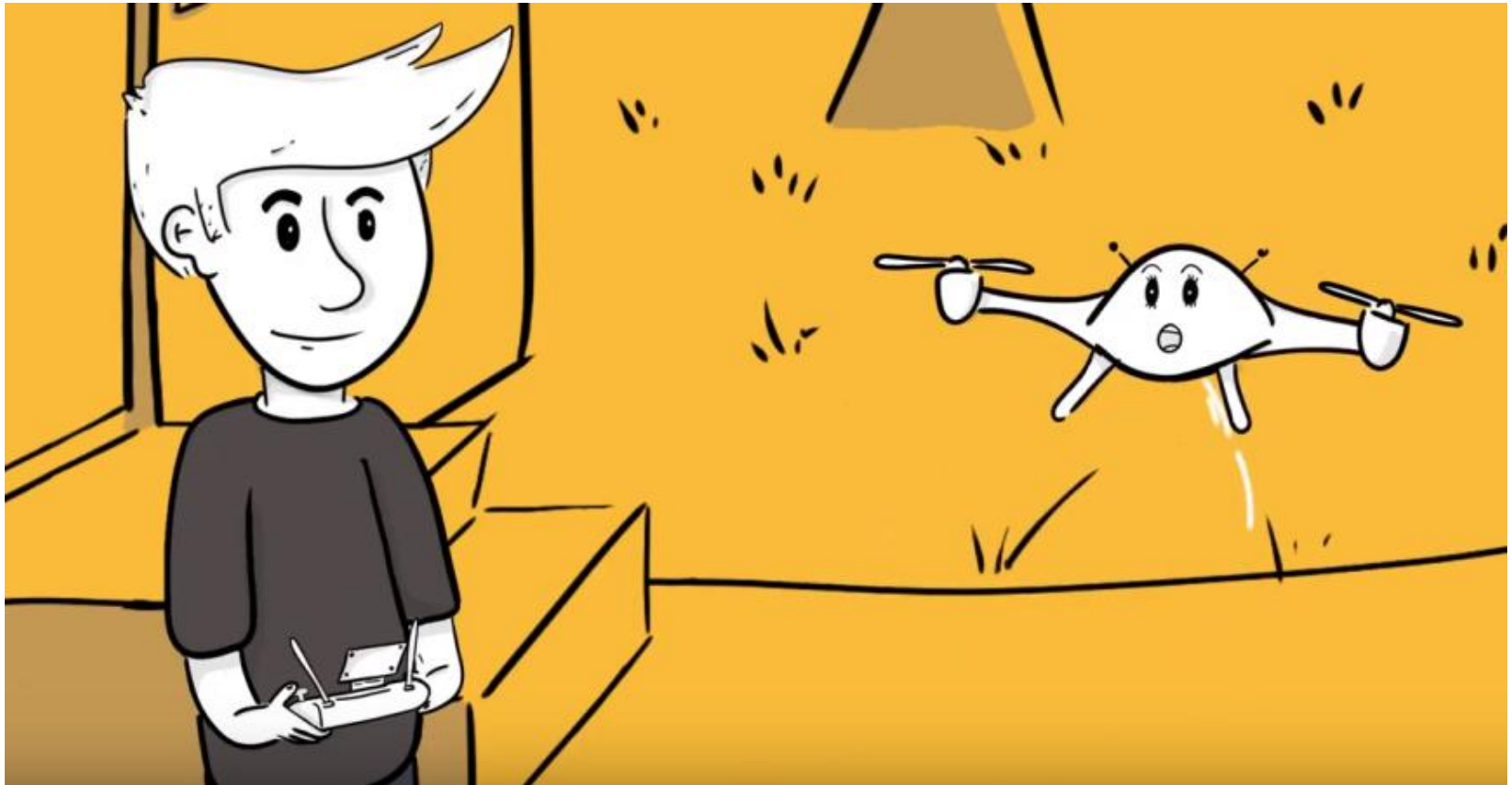
- **June 2022:**

- All model clubs and associations should receive an authorisation by the National Aviation Authority.
 - Member states may provide model clubs and association allowing their members to deviate from all requirements of the EU regulation.
 - i.e. UAS operations conducted in the framework of model aircraft clubs and associations shall be allowed to continue in accordance with relevant national rules and without an authorisation until 1 July 2022.



Next Steps

Meet Paul and Donnie





**Fly respectfully,
consider privacy**



**Fly safely, follow
the flight safety rules**



**Fly responsibly,
be insured**

THANK YOU

