

**Draft acceptable means of compliance (AMC) and  
guidance material (GM)**

**to**

**Regulation .../... [IR]**

**laying down rules and procedures  
for the operation of unmanned aircraft**

**and to**

**the Annex**

**(Part-UAS — UAS operations  
in the ‘open’ and ‘specific’ categories)**

**Disclaimer**

This document, courtesy of EASA, contains the latest draft AMC and GM to Regulation .../... [IR] laying down rules and procedures for the operation of unmanned aircraft and to its Annex (Part-UAS). It is intended to provide information to stakeholders following the publication of EASA Opinion No 01/2018. EASA does not assume any liability for its contents.

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**Draft AMC/GM to Regulation .../... [IR] laying down rules and procedures for the operation of unmanned aircraft****GM1 Article 1 Areas of applicability of this Regulation**

Regulation (EU) .../... [IR] does not apply to indoor UAS operations or to UAS operations in the 'certified' category.

**GM1 Article 2(14) Definition of 'autonomous operation'**

The definition of 'autonomous operation' does not include flight phases during which the remote pilot loses the ability to intervene in the course of the aircraft, either following the implementation of emergency procedures, or due to a loss of the command-and-control connection.

**GM1 Article 2(17) Definition of 'dangerous goods'**

Dangerous goods means articles or substances capable of posing a risk to health, safety, property or the environment, included in the list of dangerous goods of the 'Technical Instructions', or classified as such in accordance with that document. 'Technical Instructions' means the latest effective edition of International Civil Aviation Organization (ICAO) Doc 9284 'Technical Instructions for the Safe Transport of Dangerous Goods by Air', including its Supplement and any Addenda/Corrigenda thereto.

Dangerous goods include substances such as explosives, compressed liquids and gases, flammable liquids and solids, substances that react with water, oxidisers and organic peroxides, substances liable to spontaneous combustion, toxic or infectious substances, radioactive material, magnetised material, and corrosives.

**GM1 Article 3 Responsibilities of the unmanned aircraft system (UAS) operator and remote pilots**

The respective responsibilities of the UAS operator and its remote pilots are defined in UAS.OPEN.050, UAS.OPEN.070, UAS.SPEC.050, and UAS.SPEC.070.

**AMC1 Article 7 Registration number**

The registration number should consist of 10 digits organised as the following:

- 2 digits representing the nation;
- 1 digit identifying the national register (if the nation defines multiple registers); and
- 7 digits uniquely identifying the operator.

**GM1 Article 7 Keep the registration database updated and accessible in real time**

Member States (MS) should define the duration of the validity of each registration and ensure that the information in the database is accurate. Considering that the typical average lifetime of a small UAS is about 2 years and the small UAS market is very dynamic, MS should consider a 3-year validity for the data contained in the registry.

The database should be accessible in real time, for enforcement purposes, by persons authorised by any EU MS.

Member States may allow temporary registration for third-country operators.

**GM1 Article 8 Designation of the competent authority**

Member States may also designate an entity as a competent authority only for specific tasks.

**GM1 Article 9 Guidelines for Risk-based oversight (RBO)**

The guidelines below are based on the document 'practices for risk-based oversight' which may be found at:

- <https://www.easa.europa.eu/document-library/general-publications/practices-risk-based-oversight>

This document:

- highlights the relationship between RBO and the (safety) management system, the management of change, the overall performance of the organisation and the oversight cycle;
- describes the interconnection, availability and exchange of data, which will significantly change the relationship between the authority and their regulated entities, as well as their ongoing management of safety;
- does not constitute regulatory material nor means of compliance nor guidance material. It reflects the RBO state of play to date, in an effort to gain a common understanding and look ahead;
- can be used as guidelines for competent authorities having to implement RBO.

The guidelines below will be replaced in due course by further acceptable Means of Compliance and Guidance Material

1. General Definitions:

- a. Oversight: the function by means of which a competent authority ensures that the applicable requirements are met by regulated entities
- b. Risk profile: the element of risk that are inherent to the nature and operations of the regulated entity, this includes
  - The specific nature of the organisation
  - The complexity of its activities
  - The risks stemming from activities carried out.
- c. Safety performance: the demonstration of how effectively can a regulated entity mitigate its risks substantiated through the proven ability to:
  - Comply with the applicable requirements
  - Implement and maintain effective safety management
  - Identify and manage safety risks
  - Achieve and maintain safe operations

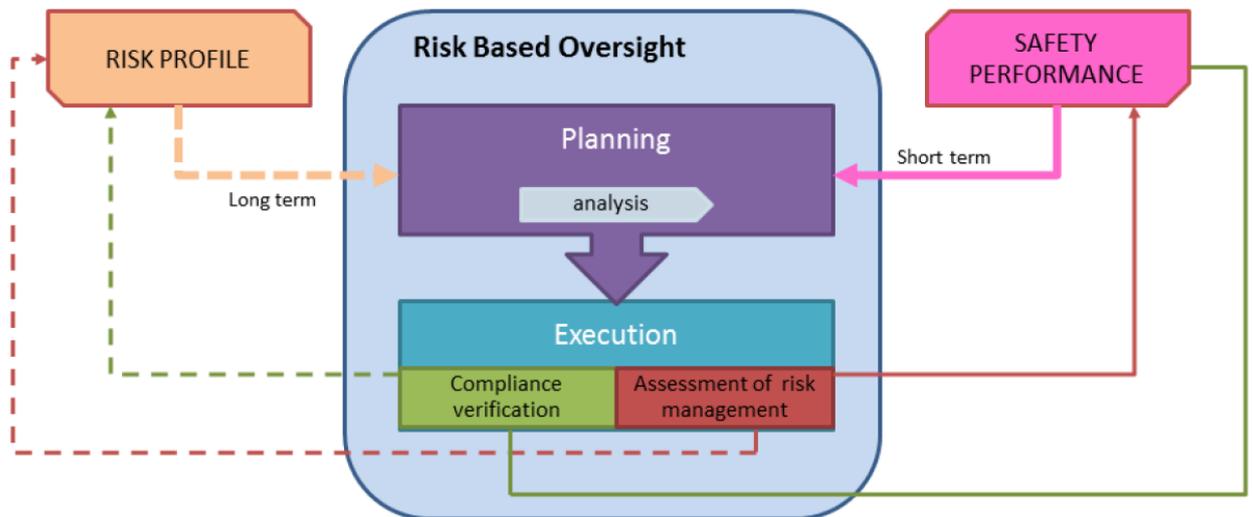
The result of past certification and /or oversight also need to be taken into account

d. Risk based oversight (RBO): a way of performing oversight, where:

- Planning is driven by the combination of risk profile and safety performance; and

- Execution focuses on the management of risk, besides ensuring compliance
2. RBO scheme:

The RBO scheme is described in paragraph 2.2 of the 'practices for risk-based oversight'. It is summed-up by the drawing below:



3. Risk profile and oversight planning:  
Risk profile and oversight are described in the paragraph 3 of the 'practices for risk-based oversight'.
4. Safety information  
Management of safety information and information sharing with other authorities are described in paragraph 4 of 'practices for risk-based oversight'.
5. Training and qualifications of inspectors  
Training and qualification of inspectors are described in paragraph 4.3 of 'practices for risk-based oversight'.
6. Conduct of risk-based audits:  
Conduct of risk-based audits is described in paragraph 5 of 'practices for risk-based oversight'.

#### **GM1 Article 11 Airspace restriction related to UAS operations**

1. Article 11 of Regulation (EU) .../... [IR] should be considered as a tool for Member States to allow them flexibility to define zones over their territory where only certain categories of UAS operation may be conducted. This includes defined areas where UAS operations are limited to commercial or leisure ones or where certain equipment, such as a geo-awareness or an electronic identification system, is mandatory. Moreover, Member States may define zones where:
  - (a) only UAS are admitted; or
  - (b) UAS, remote pilots or operators may be exempted from certain requirements; or
  - (c) operational limitations are extended.

2. When defining those zones, their extent should be considered in 3D (horizontal and vertical).
3. Special zones for UAS operations should be established in the context of airspace reservations as specified in Regulation (EC) No 2150/2005.
4. It should be considered that a UAS operator may not be familiar with the aviation regulations and procedures. Therefore, the information on zones should be made available to all UAS operators in a manner that is simple to access and understand, maximising the use of electronic devices (e.g. websites, applications for mobile devices ...); in particular, the information on the zones of a Member State should be made all available in a single source.
5. Member States should ensure that aeronautical information provided through the aeronautical information service (AIS) is consistent with the airspace areas or special zones for UAS operations.
6. Member States should also publish the airspace restrictions relevant to UAS in the National Integrated Aeronautical Information Package (AIP) Section ENR.5.1, 'Prohibited, Restricted and Danger Areas'. The publication of airspace restrictions in the AIP should ensure the situational awareness for flight crews of the manned aviation.

#### **GM2 Article 11 Airspace restrictions**

##### GENERAL

1. Airspace restrictions are defined in Article 2.2c of Regulation (EC) No 2150/2005 of 23th December 2005, which lays down common rules for the flexible use of airspace. It is expected that the Member States will establish restricted areas, which should not affect manned aviation operations. The restricted areas that are established to protect aerodrome traffic should specify volumes of airspace within which UAS operations are not allowed. The airspace restriction, established in accordance with paragraph 2 of Article 11, should clearly specify the types of the restrictions from which UAS operations are exempted.
2. When establishing a zone of airspace where a prior authorisation is needed, Member States should specify at least:
  - (a) the authorising entity (e.g. ATS unit, ANSP, competent authority);
  - (b) the means of requesting the authorisation (e.g. telephone, email, web-based);
  - (c) the minimum time for requesting the authorisation prior to the operations;
  - (d) the minimum time for granting/rejecting the authorisation prior to operations;
  - (e) the time duration of the restriction, if not permanent;
  - (f) the types of UAS operations allowed;
  - (g) the allowed UAS classes and the equipment required (e.g. geo-awareness, surveillance equipment);
  - (h) maximum height/altitude of UAS operations.

**GM3 Article 11 Airspace restriction consultation prior notifying an airspace restriction**

It is recommended that before the creation of a permanent airspace restriction, the Member State should organise a consultation of the affected stakeholders (e.g. UAS community, manned aircraft community, non-aviation authorities, etc.).

It is not necessary to consult for each and every permanent airspace restrictions only for those the MS considers that they will have a significant impact.

The form and manner of the consultation should be decided by the MS.

**GM1 Article 12(1) Exchange of safety information**

Cooperation between competent authorities should be organised pursuant to Article 61 of Regulation (EU) .../... [new BR]. Cooperation between market surveillance authorities and the exchange of safety-related and non-compliance information should be organised pursuant to Regulation (EC) No 765/2008. Article 12 of Regulation .../... [IR] is intended to help organise the information flow and cooperation between the competent authorities on the one hand, and between the market surveillance authorities on the other.

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.

**GM1 Article 12(2) Occurrence report**

According to Regulation (EU) No 376/2014, occurrences shall be reported when they refer to a condition which endangers, or which, if not corrected or addressed, would endanger an aircraft, its occupants, any other person, equipment or installation affecting aircraft operations. Article 125 of the new Basic Regulation (EU) .../... [new BR] limits the events to be reported for operations in the 'open' and 'specific' UAS categories to occurrences and other safety-related information involving such UA if the event resulted in a fatal or serious injury to a person or it involved aircraft other than UA.

**GM1 Article 6 Hobbyist flights**

Hobbyists have the following options to conduct their operations:

1. They may operate as members of a model club or association that has received from the competent authority an operational authorisation, as defined in Article 6 of Regulation (EU) .../... [IR]. In this case, they should comply with the procedures of the model club or association in accordance with the operational authorisation. The operational authorisation should define all the deviations from the aforementioned Regulation granted to the model club or association's members, including the requirement to register individual unmanned aircraft (UA).
2. In accordance with Article 11 of Regulation (EU) .../... [IR], Member States may define zones where UAS are exempted from certain requirements, and/or where the operational limitations are extended. They may also define different height limitations for those zones.
3. Operations may be conducted in Subcategory A3 in which UAS in class C3, UAS in class C4 and homebuilt UAS that do not comply with any technical requirements, are allowed. In this case, hobbyists are required to comply with the limitations of, and demonstrate the competency defined in, UAS.OPEN.40.

**GM1 Article 14 Recognition of remote pilot competencies demonstrated before the applicability date**

UAS operations are already being conducted by several remote pilots (including military pilots) in different Member States following their national rules. To facilitate the transition to comply with the requirements of Regulation (EU) .../... [IR], Member States should define a system to accept already-demonstrated remote pilot competency.

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**Draft AMC/GM to the Annex — Part-UAS 'UAS operations in the "open" and "specific" categories'****SUBPART A — 'Open' category****AMC1 UAS.OPEN.010(2)(a), UAS.OPEN.010(3)(e) and UAS.OPEN.070(4) Visual line of sight**

1. Remote pilots should at all times keep the UA at a distance such that they, or one UA observer, are able to continuously maintain visual lines of sight to the UA without using any devices to aid them other than glasses or contact lenses.
2. Operations in first-person view (FPV) can be conducted only if the remote pilot is assisted by a UA observer positioned in his or her proximity, able to provide effective directions to the remote pilot in order to maintain the required separation between the UA and any obstacle, including other air traffic. During FPV operations, the remote pilot is still responsible for the safety of the flight.

**AMC UAS.OPEN.010(3) Close proximity to an obstacle**

When the UAS operation is conducted in proximity to an obstacle taller than 120m, the remote pilot should maintain the UA within 50 m from its perimeter.

The entity responsible for the obstacle needs to request the UAS operator to conduct any operation close to it. No UAS operator should conduct any operation close to an obstacle without such an authorisation.

**AMC1 UAS.OPEN.020(1) Operational limitations in Subcategory A1**

Operations in subcategory A1 may be conducted over people, however, the remote pilot should reduce as much as possible the time during which the UA overflies persons, and when flying close to or over people, the UA should not fly less than 3 m above ground level.

Remote pilots should not fly UA over open-air assemblies of persons so as to avoid situations in which if a UA crashes, the people do not have enough space to move away from the trajectory of the UA and to avoid being hit by it.

**GM1 UAS.OPEN.030(1) and UAS.OPEN.040(1) Definition of 'uninvolved person'**

Due to the huge variety of possible circumstances, this GM only provides general guidelines. An involved person is someone who can reasonably be expected to follow directions and safety precautions given by the person controlling the operation, in order to avoid unplanned interactions with the UA.

Spectators or any other people gathered for sport activities or other mass public events that do not occur for the purpose of the UAS operation are generally considered to be 'uninvolved persons'.

In principle, in order to be considered an 'involved person', one should:

- be able to decide whether or not to participate in the UAS operation;
- broadly understand the risks involved;
- have reasonable safeguards during the UAS operations, introduced by the site manager and aircraft operator; and
- not be restricted from taking part in the event or activity if they decide not to participate in the UAS operation.

An example: when filming with a UAS at a large music festival or public event, it is not sufficient to inform the audience or anyone present via a public address system, or via a statement on the ticket, or in advance by email or text message. Those types of communication channels do not satisfy the points above. In order to be considered an involved person, each person should be asked for their permission and be made aware of the possible risk(s).

**AMC1 UAS.OPEN.020(3)(b) and UAS.OPEN.040(2) Remote pilot competency to operate in Subcategory A1 and A3**

The acquisition of competency by each remote pilot should be supported by an online training and testing tool that covers the following elements:

1. Regulation (EU) .../... [IR] and other relevant EU regulations on privacy and security with regard to:
  - (a) non-reckless behaviour, important safety precautions for UAS operations, and basic requirements regarding dangerous goods.
  - (b) VLOS, which entails:
    - (i) keeping a safe distance from people, animals, property, vehicles, and other airspace users;
    - (ii) the identification of open assemblies of people;
    - (iii) a specific code of conduct in case the UA encounters other traffic;
    - (iv) respecting the height limitation(s); and
    - (v) using a UA observer;
  - (c) obtaining updated information about any flight restrictions or conditions published by the Member State, such as:
    - (i) an overview of the low-level airspace structure that affects UAS operations; and
    - (ii) zones in which UA are banned or limited;
  - (d) familiarising themselves with the operating environment;
  - (e) emergency procedures (e.g. for lost-data-link connections) and what to do if an event occurs that causes a fatal or serious injury to a person, or when an aircraft other than a UA is involved (occurrence reporting);
  - (f) human factors involved in night operations and
  - (g) weather information sources and the effect of weather on the performance of small UA;
2. an understanding of the privacy risks;
3. an understanding of the security risks;
4. an understanding of the UAS categories and their operational limitations;
5. familiarisation with the instructions provided by the manufacturer for the operation of a UAS, and in particular with regard to:
  - (a) an overview of the main UAS parts;

- (b) becoming familiar with the remote control or transmitter;
- (c) controlling the UAS;
- (d) features that affect the safety of flight;
- (e) the preflight checklist to verify that the UA is in a safe condition;
- (f) controlling the take-off of the UA;
- (g) hovering in mid-air, when applicable, and landing the UA;
- (h) flying basic patterns with the UA; and
- (i) finding a suitable area to conduct familiarisation flights and learn how to fly the particular UAS.

**AMC1 UAS.OPEN.020(4)(b)&(c), UAS.OPEN.030(4) and UAS.OPEN.040(3)(b)&(c) Modification of a UAS with a CE Class mark**

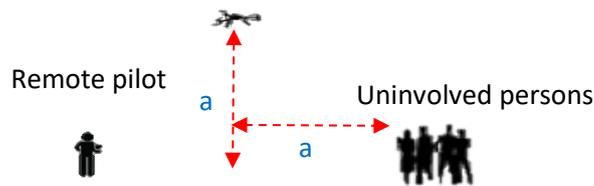
UAS operators should not make any modifications to a UAS in class C0, C1, C2 or C3 that breach compliance with the product requirements. If the operator carries out such a modification on a UAS, that UAS is no longer considered to have a CE Class mark and it may only be operated in Subcategory A3, or in the specific category in accordance with Subpart B of Annex I to Regulation (EU) .../... [IR].

**GM UAS.OPEN.020(4)(b)&(c), UAS.OPEN.030(4) and UAS.OPEN.040(3)(b)&(c) Modification of a UAS with a CE Class mark**

Modifications to UAS that breach compliance with the requirements for the CE marking are those that affect weight and performance outside the specifications of the manufacturer. A replacement of a part with another that has the same physical and functional characteristic is not considered to be a breach of the requirements for the CE mark (e.g. a replacement of a propeller with another of the same design). The UA user manual should define instructions for performing maintenance and apply changes that do not breach the CE mark requirements.

**AMC1 UAS.OPEN.30(2) Safe distance from uninvolved persons**

1. The minimum horizontal distance of the UA from uninvolved persons should be defined as the distance between the point where the UA would hit the ground in the event of a vertical fall and the position of the uninvolved persons. The safe distance of the UA from uninvolved persons is variable and is heavily dependent on the type of UAS operation and the UAS involved. The remote pilot is ultimately responsible for the determination of this distance.
2. When the UA is operating in close proximity to people, the remote pilot should keep the UA at a lateral distance from any uninvolved person that is not shorter than the height ('1:1 rule', i.e. if the UA is flying at distance of 10 m from uninvolved person, the height of the UA should not exceed 10 m) and with a minimum value of:
  - (a) 5 m, when operating a balloon or airship or when a low-speed mode is activated and a maximum speed of 3 m/s is set;
  - (b) 50 m in all other cases.



- 5 m, if operating a balloon or airship or with low speed mode
- 50 m without low speed mode

### AMC1 UAS.OPEN.030(3) Remote pilot competencies required to obtain a remote pilot certificate of competency

- In order to be eligible to attend the test for obtaining a certificate of remote pilot competency, the remote pilot should:
  - demonstrate that they passed the online test in accordance with UAS.OPEN.040(2);
  - declare that they conducted an adequate number of familiarisation flights in suitable areas as instructed by the online training.
- In order to obtain a certificate of remote pilot competency, the remote pilot should demonstrate that they:
  - understand the safety risks linked with a UAS operation in close proximity to uninjured people or with a heavier UA;
  - are able to assess the ground risk related to the environment where the operation takes place, as well as to flying in proximity to uninjured people;
  - have a basic knowledge of how to plan a flight and define contingency procedures;
  - understand how weather conditions may affect the performance of the UA; and
  - can maintain control of the UA at all times in a manner that ensures the successful outcome of a procedure or manoeuvre.
- The approved entity should verify the identity of the applicant.
- An applicant for a certificate of remote pilot competency may either receive competency-based training at a declared training organisation (DTO) or train themselves.

### GM1 UAS.OPEN.030(2) Remote pilot competencies required to obtain a certificate of remote pilot competency

A remote pilot may obtain the knowledge needed to pass the exam for a certificate of remote pilot competency in one of the following two ways:

- Competency-based training
  - Competency-based training covers aspects related to non-technical skills in an integrated manner, taking into account the particular risks associated with UAS operations.
  - Competency-based training should be developed using the analysis, design, development, implementation, evaluation (ADDIE) principles.
- Self-study

- (a) A remote pilot may undertake self-study in many ways in order to obtain a certificate of competency. The purpose of this self-study is to acquire some basic competency and familiarise themselves with the UA, as well as with the UA operations they want to conduct.
- (b) Examples of self-study:
  - (i) reading the manual or leaflet provided by the UA manufacturer;
  - (ii) reading related information or watching instructional films; and
  - (iii) obtaining information from others who have already experience in flying a UA.

The remote pilot may also undertake this study as classroom training, e-learning or similar training at a training organisation, including DTOs or approved training organisations (ATOs). Since this training is not mandated by the Member States, the national aviation authorities (NAAs) are not required to approve the training syllabuses, even if this training is provided by ATOs.

#### **AMC1 UAS.OPEN.040(1) Operations in Subcategory A3**

1. The remote pilot should keep the UA at a safe distance from the boundaries of congested areas such that no third party is endangered in the event of a UA malfunction or a loss of control. The safe distance should be determined based on the actual performance of the UA.
2. The remote pilot should assess that reasonably, no uninvolved person will be present in the area and airspace where the UA is intended to be flown, during the entire time of the UAS operation.
3. Should a person incidentally enter the visual range of the remote pilot, the remote pilot should avoid overflying the person, and discontinue the operation if the safety of the UAS operation is not ensured.

#### **AMC1 UAS.OPEN.050(1) Operational procedures**

If a UAS operator employs more than one remote pilot, the UAS operator should:

- develop procedures for UAS operations in order to coordinate the activities between its employees; and
- compile and maintain a list of their personnel and their assigned duties.

#### **AMC1 UAS.OPEN.050(2)(e) and UAS.OPEN.070(1)(a) Physical and mental condition**

Remote pilots and all other personnel should not operate when under the influence of psychoactive substances or alcohol or when unfit to perform their task(s) due to injury, fatigue, medication, sickness or other similar causes.

#### **GM1 UAS.OPEN.050(3)(a) EU declaration of conformity**

When purchasing a UAS through online distributors, the UAS operator should verify the conformity of the UAS with the requirements of Regulation (EU) .../... [DA]. The verification should be accomplished by checking that the UAS is accompanied by the EU certificate of conformity, defined in Appendix 11 to said Regulation, which should contain the same CE Class mark as the one on the label on the UA (i.e. class C0, class C1, class C2; class C3 or class C4)

#### **AMC1 UAS.OPEN.060(1) and UAS.SPEC.060(1) Registration form**

1. The UAS operator should complete the registration process online and provide at least their:

- (a) Full name or the name of the business, if a company;
  - (b) mailing address where the operator is established or residing;
  - (c) email address and telephone number;
  - (d) insurance policy number; and
  - (e) date of birth for natural persons;
2. If it is an organisation, the UA operator should include the 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'.

**AMC1 UAS.OPEN.060(3) and UAS.SPEC.060(4) Display of registration information**

1. If the UAS operator owns the UAS, it should display on the UA the registration number received at the end of the registration process in a way that this information is readable at least when the UA is on the ground without the need for any devices other than eyeglasses or corrective lenses.
2. The registration number should be stated on a fire-resistant placard; a QR code (Quick Response Code) may be an acceptable means.
3. If the size of the UA does not allow the mark to be displayed in a visible way on the fuselage, a marking inside the battery compartment is acceptable if the compartment is accessible. In such a case, the placard should be acid- and fire-resistant.
4. The owner of UAS should only register if they operate the UAS. For example, if a company owns UAS with the sole purpose of renting them to customers, it is not required to register itself. The owner of the UAS should keep a record of the renter's data at least for a period of 2 years and make it available to the competent authority, if requested.
5. If a UAS operator uses a UAS owned by a third party, the UAS operator that operates the UAS should:
  - (a) register itself;
  - (b) display its identification number on the UA; and
  - (c) upload the registration number into the e-identification system, if the UA is equipped with one.

**GM1 UAS.OPEN.060(4) and UAS.SPEC.060(5) E-identification**

The operator should upload the registration number assigned to him or her into the UA.

The UA e-identification system will combine the operator's registration number with the serial number of the UA to create a unique UA identification number. This data will be broadcast by the e-identification system.

**AMC1 UAS.OPEN.070(1)(b) Ability to take control of the UA**

1. Except in the event of a lost-link condition or a free-flight UA, the remote pilot should be able to take control of the UA at any time. Autonomous operations are not allowed in the 'open' category.
2. The remote pilot should:

- (a) be focused on the operation of the UA, as appropriate;
  - (b) not operate a UAS while operating a moving vehicle; and
  - (c) operate only one UA at a time.
3. If the remote pilot operates a UA from a moving ground vehicle or boat, the speed of the vehicle should be slow enough for the remote pilot to maintain a visual line of sight (VLOS) to the UA and maintain control of the UA at all times.

**GM UAS.OPEN.070(1)(b) Free-flight UA**

'Free flight' means performing flights with no external control, taking advantage of the ascending currents, dynamic winds and the performance of the model. Outdoor free flights are carried out with gliders or with models equipped with means of propulsion (e.g. rubber-bands, thermal engines) that raise them in altitude, before they freely glide and follow the air masses.

**AMC1 UAS.OPEN.070(2)(a) Obtaining updated information about any flight restrictions or conditions published by the Member State**

The remote pilot should check any conditions that may affect the UAS operation, such as airspace structure and limitations. This information should be retrieved from sources that are acceptable to the MS of operation.

**GM1 UAS.OPEN.070(2)(a) and UAS.SPEC.070(2)(a) Obtaining updated information about any flight restrictions or conditions published by the Member State**

Information on airspace structure and limitations will be provided by the Member States in accordance with Article 12 and may be obtained from the relevant aeronautical information publication (AIP) (usually available online), the MS's website page or through dedicated service providers (e.g. by using an application or any other electronic means). Flight restrictions include limited zones for UA or no-UA zones, as defined in Article 11 of Regulation (EU) .../... [IR].

**AMC1 UAS.OPEN.070(2)(b) Operating environment**

1. The remote pilot should check any conditions that might affect the UAS operation, such as the locations of people, property, vehicles, public roads, obstacles, aerodromes, critical infrastructure, and any other elements that may pose a risk to the safety of the UAS operation.
2. Familiarisation with the environment and obstacles should be conducted by walking around the area where the operation is intended to be performed.
3. It should be verified that the weather conditions at the time when the operation starts and those that are expected for the entire period of the operation are compatible with those defined in the manufacturer's manual.

**AMC1 UAS.OPEN.070(2)(c) Ensuring that the UAS is in a safe condition to complete the intended flight**

1. The remote pilot should:
  - (a) update the UAS with data for the geo-awareness function if one is available on the UA;

- (b) ensure that the UAS is fit to fly and complies with the instructions and limitations provided by the manufacturer;
  - (c) ensure that any payload carried is properly secured and installed and that it respects the limits for the mass and centre of gravity of the UA;
  - (d) ensure that the UA has enough propulsion energy for the intended operation based on:
    - (i) the planned operation; and
    - (ii) the need for extra energy in case of unpredictable events; and
  - (e) for UAS equipped with a loss-of-data-link recovery function, ensure that the recovery function allows a safe recovery of the UAS for the envisaged operation; for programmable loss-of-data-link recovery functions, the remote pilot may have to set up the parameters of this function to adapt it to the envisaged operation.
2. The remote pilot should be familiar with the operating environment, should consider the weather conditions (including the forecast), the light conditions, and potential sources of electromagnetic energy, which may cause undesirable effects, such as electromagnetic interference (EMI) or physical damage to the operational equipment of the UAS.

**AMC1 UAS.OPEN.070(3)(b) Ensuring the safe operation of the UA with respect to third parties on the ground or in the air**

The safe operation of the UA should be ensured by:

1. maintaining the UA at a safe distance from uninvolved people, animals, property, vehicles, aerodromes and other airspace users such that they are not endangered by the UAS operation;
2. avoiding UA operations in no-UA zones or restricted UA zones, unless the operator holds an authorisation issued by the competent authority that defined the zone.
3. avoiding manoeuvres that endanger the safe operation of the UAS; and
4. discontinuing a flight when continuing the flight may pose a hazard to other aircraft, people, animals, environment or property.

**AMC1 UAS.OPEN.070(3)(g) and UAS.SPEC.070(3)(e) Emergency response effort**

When there is an emergency response effort taking place in the operational area of a UAS, the UAS operation should be immediately discontinued unless it was explicitly authorised or requested by the responsible emergency response services. Otherwise, a safe distance must be maintained between the UA and the emergency response site so that the UA does not interfere with, or endanger, the activities of the emergency response services. The UAS operator should take particular care to not hinder possible aerial support and to protect the privacy rights of persons involved in the emergency event.

**GM1 UAS.OPEN.070(3)(g) and UAS.SPEC.070(3)(e) Emergency response**

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

**GM1 UAS.OPEN.070(3)(h) and UAS.SPEC.070(3)(f) Respect for other people's privacy rights minimises any nuisance caused to other persons or animals**

1. In order to respect other people's rights to privacy, UA should not be flown at altitudes of less than 20 m over private property without the owner's consent.
2. When the UA is equipped with a camera or an audio recording equipment, the remote pilot should not continuously and/or intentionally film a person without the person's explicit permission.
3. In order to respect wildlife, UA should not be flown close to animals.

**AMC1 UAS.OPEN.080(3) Renewal of remote pilot competency to operate in Subcategory A1 and A3**

[To be developed.]

**AMC1 UAS.OPEN.080(3) Renewal of certificate of remote pilot competency**

[To be developed.]

For information only

**SUBPART B — 'Specific' category****AMC1 UAS.SPEC.020 Operational risk assessment**

1. The operational safety risk assessment should be performed according to the specific operations risk assessment (SORA) methodology developed by JARUS.
2. The UAS operator should define the usage spectrum of the operational risk assessment, assess the risk, and identify appropriate mitigation measures, including but not limited to technical requirements, operational requirements, and operational limitations, as well as remote-pilot competency requirements and medical requirements.

**GM1 UAS.SPEC.020 Methodology for operational risk assessment**

The specific operations risk assessment (SORA) methodology developed by JARUS is considered by EASA to be acceptable to assess the safety risks of operations in the 'specific' category, but other methodologies might be used as alternative means of compliance (AltMoC) and may be proposed as acceptable means of compliance (AMC).

Aspects other than safety, such as security, privacy, environmental protection, the use of the radio frequency spectrum, etc. should be assessed in accordance with the applicable requirements established by the Member State in which the operation is intended to take place, or by other EU regulations.

**GM2 UAS.SPEC.025 Standard scenarios**

Standard scenarios may be proposed to EASA by competent authorities, by UAS operators, by manufacturers or by standardisation bodies. As per GM1 UAS.SPEC.020, SORA is an AMC for the assessment of the safety risk of operations, but other methodologies might be used as alternative means of compliance to develop standard scenarios. After EASA has evaluated a standard scenario, it may issue that standard scenario as an AMC to this Regulation.

**GM1 UAS.SPEC.030 Operational declaration**

An operational declaration is required for standard scenarios for which the associated operational risk assessment concludes that the overall intrinsic level of risk of the operation is low.

The overall intrinsic level of risk of the operation can be considered to be low when it can be mitigated to an acceptable level by using a combination of technical means, procedures and competencies that require a low level of robustness for most of those mitigations and not more than medium level for a minority of them.

The concept of the robustness of mitigations and the associated levels are described in the JARUS guidelines on Specific Operations Risk Assessment (SORA).

The standard scenario includes the operational declaration form that the UAS operator is required to submit to the competent authority.

The form may include the following information:

1. a reference to the standard scenario under which the declaration is submitted;
2. the registration number of the UAS operator;
3. the name of the accountable manager or the owner in the case of a private UAS operator;

4. a statement that the mitigation, limitations and conditions as required by the standard scenario have been put in place by the UAS operator;
5. an acknowledgement of the UAS operator's responsibility under Regulation (EU) .../... [IR].

**AMC1 UAS.SPEC.030(2) Declaration, verification and acknowledgement of receipt**

1. The competent authority should establish an online system (e.g. web based) for submission of operational declarations, which provides the submitter with an automatic acknowledgement of receipt when the submission has been successful.
2. For a submission to be considered successful, the online system should check that all the required information has been provided. Otherwise, the system should indicate to the submitter which parts of the information still need to be added to complete the submission of the declaration (e.g. fields to be filled in, compliance with requirements or statements to be accepted or acknowledged, etc.).

**AMC1 UAS.SPEC.030(3) Operations conducted in a Member State other than the Member State of registration**

1. When a UAS operation that is subject to an operational declaration takes place in an MS other than the MS of registration of the UAS operator, the UAS operator should take into account the applicable local conditions and regulations.
2. The UAS operator should submit their declaration to both the competent authority of the MS of registration and the competent authority of the MS of the operation.
3. The competent authority of the MS of registration has the responsibility for verifying that the declaration contains all the required information and documents.

**AMC1 UAS.SPEC.035(1) Operational authorisation application**

1. An operational authorisation application should include, at least, the following information:
  - (a) the registration number of the UAS operator and the serial number of the UA (and if the UA is registered, the UA registration number);
  - (b) the name of the accountable manager or the owner in the case of a private UAS operator;
  - (c) a reference to the standard scenario under which the application is submitted, if applicable;
  - (d) a description of the UAS, including its performance, that is relevant for the operation;
  - (e) a description of the proposed operation of the UAS (i.e. the concept of the operation);
  - (f) if the operation is included in a standard scenario, all the documentation required by the standard scenario;
  - (g) if the operation is not included in a standard scenario, the operational risk assessment as per UAS.SPEC.020;
  - (h) the list of mitigation measures put in place by the UAS operator, as required by the standard scenario or proposed by the UAS operator if no standard scenario is available with sufficient information for the Authority to assess the robustness of the mitigation means; and

- (i) the location(s) where the operation is intended to be conducted<sup>1</sup>.
2. The standard scenario should include the operational authorisation application form that the UAS operator is required to submit to the competent authority.
3. The application should include all the information relevant to the operation, such as:
  - (a) the name of the MS where the operation is intended to be conducted if it is different from the UAS operator's MS of registration;
  - (b) a statement of compliance with the limitations and conditions applicable to the relevant standard scenario, if applicable; and
  - (c) a signed acknowledgement of the operator's responsibility under Regulation (EU) .../... [IR].

**GM1 UAS.SPEC.035(1) Application for an operational authorisation**

1. An operational authorisation is required for standard scenarios for which the associated operational risk assessment concludes that the overall intrinsic level of risk of the operation is medium to high.
2. The overall intrinsic level of risk of the operation can be considered to be medium to high when it can be mitigated to an acceptable level by using a combination of technical means, procedures and competencies that require a level of robustness that is high for one or more of those mitigations.
3. The concept of robustness of mitigations and the associated levels are described in the JARUS guidelines on Specific Operations Risk Assessment (SORA).
4. The UAS operator may submit an application for an operational authorisation of a single flight, a series of flights over a specific period of time, or for an unlimited duration.

**AMC1 UAS.SPEC.035(3) Significant changes to the operational authorisation**

1. Any non-editorial change that affects the operational authorisation, or affects any associated documentation that is submitted to demonstrate compliance with the requirements established for the authorisation, should be considered to be a significant change.
2. With regard to the information and documentation associated with the authorisation, changes should be considered significant when they involve, for example:
  - (a) changes in the operations that affect the assumptions of the risk assessment;
  - (b) changes that relate to the management system of the UAS operator (including changes of key personnel), its ownership or its principal place of business;
  - (c) non-editorial changes that affect the operational risk assessment report;
  - (d) non-editorial changes that affect the policies and procedures of the UAS operator;
  - (e) non-editorial changes that affect the operations manual (when required).

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<sup>1</sup> The standard scenario should define whether the location may be generically described (e.g. dependent on the characteristics of the area overflown, the type of airspace, etc.) based on the concept of the operation.

**AMC1 UAS.SPEC.040(2) Operational authorisation**

The operational authorisation should include the following information:

1. the registration number of the UAS operator and the serial number of the UA (and if the UA is registered, the UA registration number);
2. a reference to the operational risk assessment report developed by the UAS operator or to the applicable standard scenario;
3. the operational limitations and conditions of the operation;
4. the mitigation measures that the UAS operator has to comply with;
5. the location(s) where the operation is authorised to take place;
6. records necessary for the type of operation; and
7. the type of events that should be reported in addition to those defined in Article 125 of Regulation (EU) 376/2014, if any.

**GM1 UAS.SPEC.040(2) Operations manual — template****MINIMUM INFORMATION**

The operations manual should contain at least the information listed below, if applicable, customised for the area and type of operation.

**OPERATIONS MANUAL TEMPLATE**

Operator's name

Table of contents

**0. Introduction**

1. Acronyms and abbreviations.
2. The system for amendment and revision of the OM (changes that require prior approval; changed to be notified to the competent authority)
3. A record of revisions
4. A list of effective pages unless the entire manual is re-issued and the manual has an effective date on it
5. A safety statement [a statement that the operations manual complies with the relevant requirements of Regulation .../... [IR] and with the authorisation or the terms of approval of the LUC and contains instructions that are to be complied with by the personnel involved in flight operations]
6. An approval Signature [the accountable manager must sign this statement]

**A. Concept of operation (ConOps)**

1. The nature of the operation and the associated risks [description]
2. The complexity of the operation [description of the UAS, equipment, remote pilot experience, load, external systems etc., as required by the specific operation]

3. The environment of operations [description of the geographical area(s) and types of operations e.g. VLOS/BVLOS in mountain area, densely populated area, on platforms, in sea or desert area, in environment sensitive area, etc.]
  4. The risk analysis and methods for reduction of identified risks [description of methodology used; bow-tie presentation or other]
- B.** The UAS, its performance and equipment [UAS used; technical log; limitations with regard to the data link, other equipment, external systems or loads, as well as performance limitations as per the manufacturer, etc.]
- C.** The duties and responsibilities of the personnel involved in the operation – the remote pilot, supervisor, controller, operations manager etc. [initial qualifications; experience in operating UAS; experience in the particular operation; training and checking; regulations and guidance to crew members concerning health, fitness for duty and fatigue; guidance to staff on how to facilitate inspections by competent authority personnel].
- D.** Normal Procedures;
1. Operational procedures [applied by the remote pilot, including coordination with other personnel; the organisation and methods to exercise operational control]
    - (a) Pre-flight preparation and checklists. This includes, but is not limited to, the following points:
      - (i) The site of the operation (assessment of the suitability, position, surface, slope, elevation, determination of the visibility, etc.);
      - (ii) Weather conditions (methods of obtaining weather forecasts);
      - (iii) The class of airspace and other aircraft operations (local aerodromes or operating sites; restrictions; permissions);
      - (iv) The individual responsibilities of crew members;
      - (v) Communication procedures;
      - (vi) The performance, equipment, systems, related controls and indications and operating instructions of the UA (reference to or duplication of information from the manufacturer's manual);
      - (vii) Cross-border operations (specific local requirements);
      - (viii) Hazards/risks, third-party risk management, etc.;
    - (b) Take-off and landing procedures;
    - (c) En route procedures [Instructions on how to determine the best flight route; obstacles in the area, height; congested environments];
    - (d) Loss of control (loss of data link, etc.);
    - (e) Abort procedures for use following a critical system failure.
  2. Ground procedures [UA loading so that in the event of a technical fault, the load or parts of it falling from the UA do not endanger people or damage third-party property; unloading].
    - (a) Dangerous goods (limitations on their nature, quantity and packaging; acceptance prior to loading, inspecting packages for any evidence of leakage or damage).

- E. Emergency procedures [include lost link; flyaway; fire (UA and ground station); preventative measures].
- F. Security [instructions, guidance, procedures, and responsibilities on how to implement security requirements and protect the UAS from unauthorised modification, interference, etc.]
- G. Record keeping [instructions on logs and records of pilots and other data considered useful for the tracking and monitoring of the activity].

**AMC1 UAS.SPEC.040(4) Operations conducted in a Member State other than the Member State of registration**

1. When a UAS operation subject to an operational authorisation takes place in an MS other than the MS of registration of the UAS operator, the UAS operator should gather information about local conditions and regulations in the area of its operation and submit the application for the authorisation to the competent authority of its MS of registration. The UAS operator should satisfy the mitigation requirements related to the local conditions.
2. Liaison with the competent authority of the MS of operation may be required.

**AMC2 UAS.SPEC.040(4) Authorisation of a UAS operation conducted in the airspace of an MS other than the MS of registration**

The procedure for issuing an authorisation to a UAS operation conducted in the airspace of an MS other than the MS of registration is shown in Figure 1 and described by the following steps.

1. When a UAS operation takes place in an MS other than the UAS operator’s MS of registration, the UAS operator should also include in the application the list of local conditions published by the MS of operations, if any, and how they comply with them.
2. The competent authority of the MS of registration should verify that the local conditions published by the competent authority of the MS of registration have been taken into account by the applicant and should coordinate the authorisation with the competent authority of the MS of operation.
3. The UAS operator may then conduct the operation.

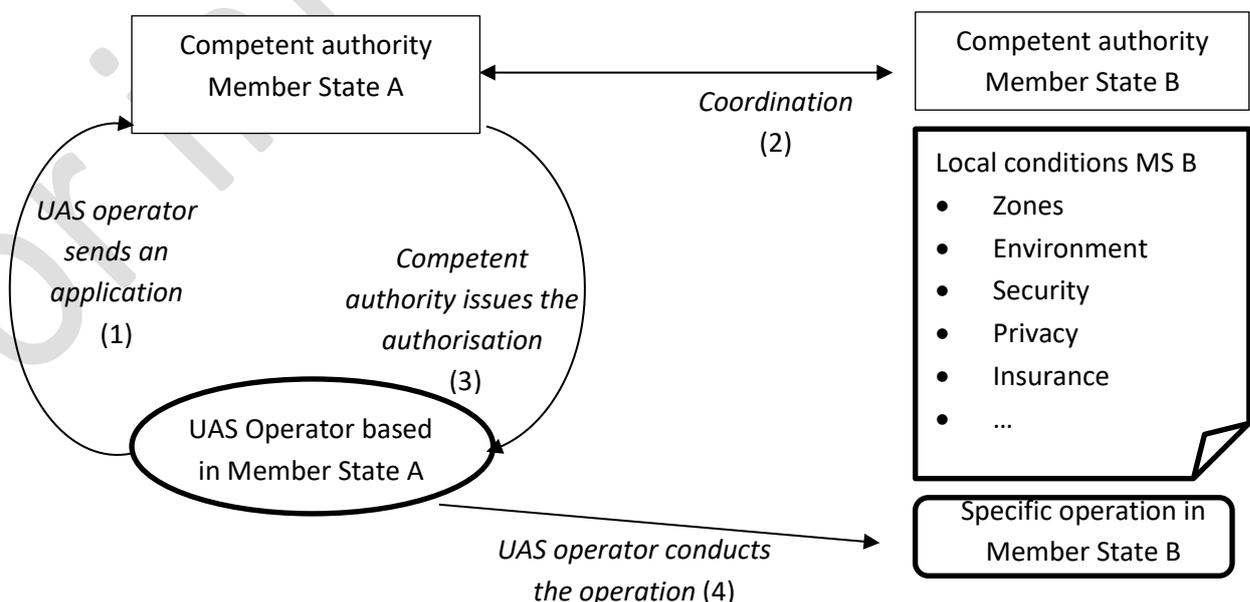


Figure 1 - procedure for issuing an authorisation to a UAS operation conducted in the airspace of an MS other than the MS of registration

**AMC1 UAS.SPEC.050(1) Operator's procedures**

1. The UAS operator should develop procedures as required by the standard scenario or by the operational authorisation.
2. If a UAS operator employs more than one pilot, the UAS operator should:
  - (a) develop procedures for UAS operations in order to coordinate the activities between its personnel; and
  - (b) compile and maintain a list of their personnel and their assigned duties.
3. The UAS operator should allocate functions and responsibilities in accordance with the level of autonomy of the UAS during the operation.

**AMC1 UAS.SPEC.050(5) Logging of flight activities and record-keeping**

1. An acceptable means to log and record the flight activities is to use a logbook, which may be electronic.
2. The information to be recorded should be indicated in the standard scenario or in the operational authorisation, which may include the following:
  - (a) the identification of the UAS;  
NOTE: if the UAS is not subject to registration, the identification of the UAS may be done using the serial number of the UAS.
  - (b) the date, time, and location of the take-off and landing;
  - (c) the total number of flight hours/cycles;
  - (d) in the case of a remotely piloted operation, the name of the remote pilot responsible for the flight;
  - (e) any significant incident or accident that occurred during the operation;
  - (f) a completed pre-flight inspection;
  - (g) any defects and rectifications;
  - (h) any repairs and changes to the UAS configuration; and
  - (i) the information required to comply with UAS.SPEC.100.
3. Records should be stored for 2 years in a manner that ensures their protection from unauthorised access, damage, alteration, and theft.

**GM1 UAS.SPEC.050(8) Level of autonomy and guidelines for human-autonomy interaction**

The concept of autonomy, its levels and human-autonomous system interactions are currently being discussed in various domains (not only in aviation), and no common understanding has yet been reached. Guidance will therefore be provided once this concept is mature and globally accepted.

Nevertheless, the risk assessment of autonomous operations should ensure, as for any other operations, that the risk is mitigated to an acceptable level.

Besides, it is expected that autonomous operations or operations with a high level of autonomy will be subject to authorisation and will not be covered by standard scenarios until enough experience is gained.

**AMC1 UAS.SPEC.055(3) Action in cases of operations/flights that exceed the conditions and limitations defined in the operational authorisation**

When a model club or association is informed that a member has exceeded the conditions and limitations defined in the operational authorisation, appropriate measures should be taken, proportionate to the risk posed. Considering the level of risk, the model club or association should decide whether the competent authority should be informed. In any case, occurrences that cause an injury to persons or involved aircraft other than UA, as defined in Article 125 of Regulation (EU) .../... [new BR], should be reported by the model club or association to the competent authority.

**GM1 UAS.SPEC.060 Registration within model aircraft associations and clubs**

Model clubs and associations may fulfil the UAS registration requirement on behalf of their members, and provide the related data to the entity designated for that purpose by the Member State.

The procedures of model clubs and associations should define acceptable methods for their members to display the identification information on the UA.

**AMC1 UAS.SPEC.070(2)(a) Obtaining updated information about any flight restrictions or conditions published by the Member State**

The remote pilot, or the operator in the case of an autonomous operation, should check any conditions that may affect the UAS operation, such as the airspace structure and limitations. This information should be retrieved from sources that are acceptable to the MS of operation.

**AMC1 UAS.SPEC.070(2)(b) Operating environment**

1. The remote pilot, or the operator in the case of an autonomous operation, should check any conditions that might affect the UAS operation, such as the locations of people, property, vehicles, public roads, obstacles, aerodromes, critical infrastructure, and any other elements that may pose a risk to the safety of the UAS operation.
2. Familiarisation with the environment and obstacles should be conducted through a survey of the area where the operation is intended to be performed.
3. It should be verified that the weather conditions at the time when the operation starts and those that are expected for the entire period of the operation are compatible with those defined in the manufacturer manual, as well as with the operational authorisation or standard scenario, as applicable.

**AMC1 UAS.SPEC.070(2)(c) Ensuring that the UAS is in a safe condition to complete the intended flight**

1. The remote pilot, or the operator in the case of an autonomous operation, should:
  - (a) update the UAS with data for the geo-awareness function if one is available on the UA;

- (b) ensure that the UAS is fit to fly and complies with the instructions and limitations provided by the manufacturer;
  - (c) ensure that any payload carried is properly secured and installed, respecting the limits for the mass and centre of gravity of the UA;
  - (d) ensure that the UA has enough propulsion energy for the intended operation based on:
    - (i) the planned operation; and
    - (ii) the need for extra energy in case of unpredictable events; and
  - (e) for UAS equipped with a loss-of-data-link recovery function, ensure that the recovery function allows a safe recovery of the UAS for the envisaged operation; for programmable loss-of-data-link recovery functions, the remote pilot may have to set up the parameters of this function to adapt it to the envisaged operation.
2. The remote pilot, or the UAS operator for autonomous operations, should be familiar with the operating environment, should consider weather conditions (including forecast), light conditions, and potential sources of electromagnetic energy, which may cause undesirable effects, such as electromagnetic interference (EMI) or physical damage to the operational equipment of the UAS.

**AMC1 UAS.SPEC.070(3)(b) Ensuring the safe operation of the UA**

The safe operation of the UAS should be ensured by:

1. maintaining a safe distance of the UA from uninvolved people, animals, property, vehicles, aerodromes and from other airspace users such that they are not endangered by the UAS operation. This safe distance should be derived from the operation risk assessment or defined by the standard scenario;
2. avoiding operation of the UA in no-UA zones or restricted UA zones, unless the operator holds an authorisation issued by the competent authority that defined the zone;
3. avoiding manoeuvres that endanger the safe operation of the UAS; and
4. discontinuing a flight when continuing the flight may pose a hazard to other aircraft, people, animals, environment or properties.

**AMC1 UAS.SPEC.070(3)(e) Emergency response effort**

When there is an emergency response effort taking place in the operational area of a UAS, that UAS operation should be immediately discontinued unless it was explicitly authorised or requested by the responsible emergency response services. When the emergency site is not in the UAS operational area but the UA might transit through the vicinity of that site, a safe distance must be maintained between the UA and the emergency response site such that the UA does not interfere with, or endanger, the activities of the emergency response services. The UAS operator should take particular care to not hinder possible aerial support and to protect the privacy rights of persons involved in the emergency event.

**GM1 UAS.SPEC.100 Use of certified equipment**

For the purpose of UAS.SPEC.100, 'certified equipment' is considered to be any equipment for which the relevant design organisation has demonstrated compliance with the applicable certification

specifications and received a form of recognition from EASA that attests such compliance (e.g. ETSO authorisation). This process is independent from the CE marking process.

The use of certified equipment or certified UA in the specific category of operation does not imply a transfer of the flight activities into the certified category of operation. However the use of certified equipment or certified UA in the specific category should be considered as a risk reduction and/or mitigation measure in the specific operations risk assessment (SORA).

#### **GM1 UAS.SPEC.110 Alternative means of compliance**

UAS operators may propose alternative means of compliance, providing that an equivalent level of safety is guaranteed. In order to demonstrate that the proposed means of compliance meet the requirements defined in this Regulation, a risk assessment should be completed and documented. The result of this risk assessment should demonstrate that an equivalent level of safety to that established by the acceptable means of compliance (AMC) adopted by EASA is reached.

**SUBPART C — LIGHT UAS OPERATOR CERTIFICATE (LUC)****GM1 UAS.LUC.010 General requirements for an LUC**

LUCs are not mandatory. UAS operators may decide to apply for authorisations or issue declarations, as applicable, for their operations or apply for an LUC.

An LUC holder is considered to be a UAS operator, therefore he or she should register according to UAS.SPEC.060 and can do it in parallel to the LUC application.

**AMC1 UAS.LUC.010(3) Application for an LUC**

The application for an LUC should include the following information:

1. a description of the UAS operator's management system, including its organisational structure and safety management system;
2. the name(s) of the responsible UAS operator's personnel, including the person responsible for authorising operations with UASs; and
3. 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.

**AMC1 UAS.LUC.020(3) Operational control**

The organisation and methods established by the LUC holder to exercise operational control within its organisation should be included in the operations manual.

**GM1 UAS.LUC.020(3) Operational control**

'Operational control' should be understood as the responsibility for the initiation, continuation, termination or diversion of a flight in the interest of safety.

'System' in relation to operational control should be understood as the organisation, methods, documentation, personnel and training of those personnel for the initiation, continuation, termination or diversion of a flight in the interest of safety.

**AMC1 UAS.LUC.020(5) Record keeping****GENERAL**

1. The record-keeping system should ensure that all records are stored in a manner that ensures their protection from damage, alteration and theft. They should be accessible whenever needed within a reasonable time. These records should be organised in a way that ensures traceability, availability and retrievability throughout the required retention period, starting when the record was created or last amended. Adequate backups should be ensured.
2. Records should be kept in paper form or in an electronic format, or a combination of both. Records stored on microfilm or optical disc format are also acceptable.
3. All records shall be kept for at least 3 years.
4. Personnel records for each person shall be kept as long as the person works for the organisation, and shall be retained until 3 years after the person has left the organisation.

**AMC1 UAS.LUC.030(1)(a) Safety management system**

## SAFETY POLICY

1. The safety policy should:
  - (a) be endorsed by the accountable manager;
  - (b) reflect organisational commitments regarding safety, and its proactive and systematic management;
  - (c) be communicated, with visible endorsement, throughout the organisation;
  - (d) include internal reporting principles, and encourage personnel to report errors related to UAS operations, incidents and hazards; and
  - (e) recognise the need for all personnel to cooperate with compliance monitoring and safety investigations.
2. The safety policy should include a commitment:
  - (a) to improve towards the highest safety standards;
  - (b) to comply with all applicable legislation, meet all applicable standards, and consider best practices;
  - (c) to provide appropriate resources;
  - (d) to apply the principles of human factors;
  - (e) to enforce safety as a primary responsibility of all managers; and
  - (f) to apply 'just culture' principles and, in particular, not to make available or use the information on occurrences:
    - (i) to attribute blame or liability to someone for reporting something which would not have been otherwise detected; or
    - (ii) for any purpose other than the improvement of safety.
3. The senior management of the operator should:
  - (a) continually promote the operator's safety policy to all personnel, and demonstrate their commitment to it;
  - (b) provide the necessary human and financial resources for the implementation of the safety policy; and
  - (c) establish safety objectives and associated performance standards.

**GM1 UAS.LUC.030(1)(a) Safety management system**

## SAFETY POLICY

The safety policy is the means whereby an organisation states its intention to maintain and, where practicable, improve safety levels in all its activities and to minimise its contribution to the risk of an accident or serious incident as far as is reasonably practicable. It reflects the management's commitment to safety, and should reflect the organisation's philosophy of safety management, as well as being the foundation on which the organisation's safety management system is built. It serves as a

reminder of 'how we do business here'. The creation of a positive safety culture begins with the issuance of a clear, unequivocal direction.

The commitment to apply 'just culture' principles forms the basis for the organisation's internal rules that describe how 'just culture' principles are guaranteed and implemented.

For organisations that have their principal place of business in a Member State, Regulation (EU) No 376/2014 defines the 'just culture' principles to be applied (refer in particular to Article 16(11) thereof).

#### **GM2 UAS.LUC.030(1)(b) Safety management system**

##### SAFETY REPORTING AND INTERNAL INVESTIGATIONS

The purpose of safety reporting and internal investigations is to use reported information to improve the level of safety performance of the UAS operator. The purpose is not to attribute blame or liability.

The specific objectives of safety reporting and internal investigations are to:

1. enable assessments of the safety implications of each relevant incident and accident, including previous similar occurrences, so that any necessary action can be initiated; and
2. ensure that knowledge of relevant incidents and accidents is disseminated so that other persons and operators may learn from them.

All occurrence reports that are considered to be reportable by the person who submits the report should be retained, as the significance of such reports may only become obvious at a later date.

#### **AMC1 UAS.LUC.030(1)(c) Safety management system**

##### COMMUNICATION ON SAFETY

1. The organisation should establish communication about safety matters that:
  - (a) ensures that all personnel are aware of the safety management activities, as appropriate, for their safety responsibilities;
  - (b) conveys safety-critical information, especially information related to assessed risks and analysed hazards;
  - (c) explains why particular actions are taken; and
  - (d) explains why safety procedures are introduced or changed.
2. Regular meetings with personnel, where information, actions, and procedures are discussed, may be used to communicate safety matters.

#### **GM1 UAS.LUC.030(1)(c) Safety management system**

##### TRAINING AND SAFETY PROMOTION

Training, combined with safety communication and information sharing form part of safety promotion and supplement the organisation's policies, encouraging a positive safety culture and creating an environment that is favourable to the achievement of the organisation's safety objectives.

Safety promotion can also be the instrument for the development of a just culture.

Depending on the particular risk, safety promotion may constitute or complement a risk mitigation action, an effective reporting system and an organisation that learns from experience.

**AMC1 UAS.LUC.030(1)(d) Safety management system**

## SAFETY RISK MANAGEMENT

The LUC holder should have a safety management system that is able to perform at least the following:

1. identify hazards through reactive, proactive, and predictive methodologies, using various data sources, including safety reporting and internal investigations;
2. collect, record, analyse, act on and generate feedback about hazards and the associated risks that affect the safety of the operational activities of the operator;
3. develop an operational risk assessment as required by UAS.SPEC.020;
4. carry out internal safety investigations;
5. monitor and measure safety performance through safety reports, safety reviews, in particular during the introduction and deployment of new technologies, safety audits, including periodically assessing the status of safety risk controls, and safety surveys;
6. manage safety risks related to a change, using a documented process to identify any external and internal change that may have an adverse effect on safety; the management of change should make use of the operator's existing hazard identification, risk assessment, and mitigation processes;
7. manage the safety risks that stem from products or services delivered through subcontractors, by using its existing hazard identification, risk assessment, and mitigation processes, or by requiring that the subcontractors have an equivalent process for hazard identification and risk management; and
8. respond to emergencies using an emergency-response plan (ERP) that reflects the size, nature, and complexity of the activities performed by the organisation. The ERP should:
  - (a) contain the action to be taken by the operator or specified individuals in an emergency;
  - (b) provide for a safe transition from normal to emergency operations and vice versa; and
  - (c) ensure coordination with the ERPs of other organisations, where appropriate;
  - (d) describe emergency training/drills, as appropriate.

**GM1 UAS.LUC.030(1)(d) Safety management system**

## SAFETY RISK MANAGEMENT

In very broad terms, the objective of safety risk management is to eliminate risk, where practical, or reduce the risk (likelihood/severity) to acceptable levels, and to manage the remaining risk to avoid or mitigate any possible undesirable outcome. Safety risk management is, therefore, integral to the development and application of effective safety management.

Safety risk management can be applied at many levels in an organisation. It can be applied at the strategic level and at operational levels. The potential for human error, its influences and sources, should be identified and managed through the safety risk management process. HF (human factors) risk management should allow the organisation to determine where it is vulnerable to human performance limitations.

**AMC1 UAS.LUC.030(1)(e) Safety management system**

## DOCUMENTATION

1. The safety management system documentation of the LUC holder should be included in a safety management manual (SMM) or in the LUC manual. If that documentation is contained in more than one operator's manual and is not duplicated, cross references should be provided.
2. The SMM should include the following:
  - (a) the scope of the activities under the UAS operator's safety management system;
  - (b) the safety policy and objectives;
  - (c) the titles and names of persons referred to in UAS.LUC.30(c), as well as a chart showing the lines of responsibility between those persons;
  - (d) procedures that specify how the LUC holder ensures compliance with the requirements of Regulation (EU) .../... [IR];
  - (e) the safety accountability of the accountable manager;
  - (f) the safety responsibilities of key safety personnel;
  - (g) documentation control procedures;
  - (h) hazard identification and risk management methodologies;
  - (i) safety action planning;
  - (j) safety performance monitoring;
  - (k) incident investigation and reporting;
  - (l) emergency response planning;
  - (m) management of change; and
  - (n) procedures for record-keeping.

**GM1 UAS.LUC.030(1)(e) Safety management system**

## MANAGEMENT OF CHANGE

Unless properly managed, changes in organisational structure, facilities, scope of work, personnel, documentation, policies and procedures, etc. can result in the inadvertent introduction of new hazards, which expose the organisation to new, or increased risk. Effective organisations seek to improve their processes, with conscious recognition that changes can expose the organisations to potentially latent hazards and risks if the changes are not properly and effectively managed.

Regardless of the magnitude of a change, large or small, proactive consideration should always be given to the safety implications. This is primarily the responsibility of the team that proposes and/or implements the change. However, change can only be successful if all the personnel affected by the change are engaged and involved, and they participate in the process. The magnitude of a change, its safety criticality, and its potential impact on human performance should be assessed in any change management process.

The process for the management of change typically provides principles and a structured framework for managing all aspects of the change. Disciplined application of change management can maximise the effectiveness of the change, engage staff, and minimise the risks inherent in change.

Change is the catalyst for an organisation to perform the hazard identification and risk management processes.

Some examples of change include, but are not limited to:

- (a) changes to the organisational structure;
- (b) a new type of UAS being employed;
- (c) additional UAS of the same or similar type being acquired;
- (d) significant changes in personnel (affecting key personnel and/or large numbers of personnel, high turn-over);
- (e) new or amended regulations;
- (f) changes in financial status;
- (g) new location(s), equipment, and/or operational procedures; and
- (h) new subcontractors.

A change may have the potential to introduce new human factors issues, or exacerbate pre-existing issues. For example, changes in computer systems, equipment, technology, personnel (including the management), procedures, the work organisation, or work processes are likely to affect performance.

The purpose of integrating human factors into the management of change is to minimise potential risks by specifically considering the impact of the change on the people within a system.

Special consideration, including any human factors issues, should be given to the 'transition period'. In addition, the activities utilised to manage these issues should be integrated into the change management plan.

Effective management of change should be supported by the following:

1. implementation of a process for formal hazard analyses/risk assessment for major operational changes, major organisational changes, changes in key personnel, and changes that may affect the way a UAS operation is carried out;
2. identification of changes likely to occur in business which would have a noticeable impact on:
  - (a) resources — material and human;
  - (b) management guidance — processes, procedures, training; and
  - (c) management control;
3. safety case/risk assessments that are focused on aviation safety.
4. involvement of key stakeholders in the change management process as appropriate.

During the change management process, previous risk assessments and existing hazards are reviewed for possible effects.

**GM2 UAS.LUC.030(1)(e) Safety management system**

## SAFETY RISK MANAGEMENT - INTERFACES BETWEEN ORGANISATIONS

Safety risk management processes should specifically address the planned implementation of, or participation in, any complex arrangements (such as when multiple organisations are contracted, or when multiple levels of contracting/subcontracting are included).

Hazard identification and risk assessment start with an identification of all parties involved in the arrangement, including independent experts and non-approved organisations. This extends to the overall control structure, and assesses in particular the following elements across all subcontract levels and all parties within such arrangements:

1. coordination and interfaces between the different parties;
2. applicable procedures;
3. communication between all the parties involved, including reporting and feedback channels;
4. task allocation, responsibilities and authorities; and
5. the qualifications and competency of key personnel with reference to CAMO.A.305.

Safety risk management should focus on the following aspects:

1. clear assignment of accountability and allocation of responsibilities;
2. only one party is responsible for a specific aspect of the arrangement - there should be no overlapping or conflicting responsibilities, in order to eliminate coordination errors;
3. the existence of clear reporting lines, both for occurrence reporting and progress reporting;
4. the possibility for staff to directly notify the organisation of any hazard by suggesting an obviously unacceptable safety risk as a result of the potential consequences of this hazard.

Regular communication between all parties to discuss work progress, risk mitigation actions, changes to the arrangement, as well as any other significant issues, should be ensured.

**AMC1 UAS.LUC.030(1)(f) Safety management system**

## COMPLIANCE MONITORING

1. The accountable manager should designate a manager to monitor the compliance of the LUC holder with:
  - (a) the terms of approval, the privileges, the risk assessment and the resulting mitigation measures;
  - (b) all operator's manuals and procedures; and
  - (c) training standards.
2. The compliance monitoring manager should:
  - (a) have knowledge of, and experience in, compliance monitoring;
  - (b) have direct access to the accountable manager to ensure that findings are addressed, as necessary; and
  - (c) not be one of the other persons referred to in UAS.LUC.030(2)(c).

3. The tasks of the compliance monitoring manager may be performed by the safety manager, provided that the latter has knowledge of, and experience in, compliance monitoring.
4. The compliance monitoring function should include audits and inspections of the LUC holder. The audits and inspections should be carried out by personnel who are not responsible for the function, procedure or products being audited.
5. An organisation should establish an audit plan to show when and how often the activities as required by this Regulation will be audited.
6. The independent audit should ensure that all aspects of compliance, including all the sub-contracted activities, are checked within a period defined in the scheduled plan, and agreed by the competent authority.
7. Where the organisation has more than one approved location, the compliance monitoring function should describe how these locations are integrated into the system and include a plan to audit each location on a risk-based programme as agreed by the competent authority.
8. A report should be raised each time an audit is carried out, describing what was checked and the resulting findings against applicable requirements and procedures.
9. The feedback part of the compliance monitoring function should address who is required to rectify any non-compliance in each particular case, and the procedure to be followed if rectification is not completed within appropriate timescales. The procedure should lead to the accountable manager.
10. The LUC holder should be responsible for the effectiveness of the compliance monitoring function, in particular for the effective implementation and follow-up of all corrective measures.

**GM1 UAS.LUC.030(1)(f) Safety management system**

## COMPLIANCE MONITORING

The primary objective of the compliance monitoring function is to enable the UAS operator to ensure a safe operation and to remain in compliance with this Regulation.

An external organisation may be contracted to perform compliance monitoring functions. In such cases, that organisation should designate the compliance monitoring manager.

The compliance monitoring manager may use one or more auditors to carry out compliance audits and inspections of the LUC holder under his own responsibility.

**AMC1 UAS.LUC.030(1)(g) Safety management system**

## USE OF SUBCONTRACTORS

1. When an LUC holder uses products or services delivered through a subcontractor that is not itself certified in accordance with this Subpart, the subcontractor should work under the terms of the LUC.
2. Regardless of the certification status of the subcontractor, the LUC holder is responsible for ensuring that all subcontracted products or services are subject to the hazard identification, risk management, and compliance monitoring of the LUC holder.

**AMC1 UAS.LUC.030(2) Safety management system**

## PERSONNEL REQUIREMENTS — GENERAL

1. The accountable manager should have the authority to ensure that all activities are financed and carried out in accordance with the requirements of Regulation (EU) .../... [IR].
2. The safety manager should:
  - (a) facilitate hazard identification, risk analysis, and risk management;
  - (b) monitor the implementation of risk mitigation measures, as listed in the safety action plan, unless action follow-up is addressed by the compliance monitoring function;
  - (c) provide periodic reports on safety performance;
  - (d) ensure maintenance of the safety management documentation;
  - (e) ensure that there is safety management training available and that it meets acceptable standards;
  - (f) provide all the personnel involved with advice on safety matters; and
  - (g) ensure the initiation and follow-up of internal occurrence investigations.
3. Management and other personnel of the LUC holder should be qualified for the planned operations in order to meet the relevant requirements of Regulation (EU) ..../... [IR].
4. The LUC holder should ensure that its personnel receive appropriate training to remain in compliance with the relevant requirements of Regulation (EU) .../... [IR].

**GM1 UAS.LUC.030(2)(a) Safety management system**

## ACCOUNTABLE MANAGER

The accountable manager is a single, identifiable person who has the responsibility for the effective and efficient performance of the LUC holder's safety management system. The functions of the accountable manager cannot be delegated.

**GM1 UAS.LUC.030(2)(b) Safety management system**

## PERSONNEL REQUIREMENTS

The functions of the safety manager may be fulfilled by the accountable manager or another person charged by the UAS operator with the responsibility of ensuring that the operator remains in compliance with the requirements of Regulation (EU) .../... [IR].

Where the safety manager already fulfils the functions of the compliance-monitoring manager, the accountable manager cannot be the safety manager.

Depending on the size of the organisation and the nature and complexity of its activities, the safety manager may be assisted by additional safety personnel for the performance of all the safety management tasks.

Regardless of the organisational set-up, it is important that the safety manager remains the unique focal point as regards the development, administration, and maintenance of the organisation's management system.

**GM1 UAS.LUC.030(2)(c) Safety management system**

## PERSONNEL REQUIREMENTS

A UAS operator may include in the organisational structure of its safety management system a safety committee and, if needed, one or more safety action groups.

1. Safety committee
  - (a) A safety committee should be established to support the accountable manager in their safety responsibilities. The safety committee should monitor:
    - (i) the operator's performance against safety objectives and performance standards;
    - (ii) whether safety action is taken in a timely manner; and
    - (iii) the effectiveness of the operator's safety management processes.
2. Safety action group
  - (a) Depending on the scope of the task and the specific expertise required, one or more safety action groups should be established to assist the safety manager in their functions.
  - (b) The safety action group should be comprised of managers, supervisors and personnel from operational areas, depending on the scope of the task and the specific expertise required.
  - (c) The safety action group should at least perform the following:
    - (i) monitor operational safety and assess the impact of operational changes on safety;
    - (ii) define actions to mitigate the identified safety risks; and
    - (iii) ensure that safety measures are implemented within agreed timescales.

**GM1 UAS.LUC.030(3)(c) Safety management system**

## KEY SAFETY PERSONNEL

The operator should appoint personnel to manage key fields of activity such as operations, maintenance, training, etc.

**AMC1 UAS.LUC.040 Procedures for subcontractors**

If any activity is carried out by partner organisations or subcontractors, the LUC manual should include a relevant statement of how the LUC holder is able to ensure compliance with UAS.LUC.30(1)(f), and should contain, directly or by cross reference, descriptions of, and information on, the activities of those organisations or subcontractors, as necessary to substantiate this statement.

**GM1 UAS.LUC.040 LUC manual**

## CONTENT

The LUC manual should contain a statement signed by the accountable manager that confirms that the organisation will at all times work in accordance with this Regulation, as applicable, and with the approved LUC manual. When the accountable manager is not the chief executive officer of the organisation, then the chief executive officer shall countersign the statement.

The LUC manual should contain at least the following information, customised according to the complexity of the operator.

The LUC manual may contain references to the Operations Manual (OM) where an OM is compiled in accordance with GM1 UAS.SPEC.040(2).

#### LUC MANUAL TEMPLATE

Operator's name

Table of contents

- 0.** Introduction [the information under Chapter O, points 1-6 of the OM may be duplicated here or simply referenced to the OM]
- I.** Safety management manual (SMM)
  - 1. Safety policy [details of the operator's safety policy, safety targets]
  - 2. Organisational structure [organogram and brief description]
  - 3. Duties and responsibilities of the accountable manager and key management personnel; [The person who authorises operations must be clearly identified]
  - 4. Safety management system [description; lines of responsibilities]
  - 5. Operational control system [description of the procedures and responsibilities necessary to exercise operational control with respect to flight safety]
  - 6. Compliance monitoring system
  - 7. Safety risk management [the information about hazard identification, safety risk assessment and mitigation under Chapter A of the OM may be duplicated here or simply referenced to the OM]
  - 8. Management of change [description of the process to identify safety-critical changes within the organisation and its operation and to eliminate or modify safety risk controls that are no longer needed or effective due to such changes]
  - 9. Development and approval of an operational scenario [description of the process]
  - 10. Interface with subcontractors and partners
  - 11. Documentation of key management system processes
- II.** Operations manual (OM) [the information under Chapters A - G of the OM may be duplicated here or references to the OM may be provided]
- III.** Handling, notifying and reporting accidents, incidents and occurrences
- IV.** Handling of dangerous goods [the relevant regulations and instructions to crew members concerning the transport of dangerous goods (such as pesticides and chemicals, etc.) and the use of dangerous goods during operations (such as batteries and fuel cells, engines, magnetising materials, pyrotechnics, flares and firearms.)]

#### **AMC1 UAS.LUC.040(4) LUC Manual**

The LUC holder should ensure that all personnel are able to understand the language in which those parts of the LUC manual which pertain to their duties and responsibilities are written.

**AMC1 UAS.LUC.050 Terms of approval of an LUC holder**

LIGHT UAS OPERATOR CERTIFICATE - LUC Terms of approval for conducting operations with unmanned aircraft in the specific category <sup>2</sup>	
(1) State of the UAS operator:	(3) LUC #:
(2) Issuing Authority:	
(4) UAS operator's Name: (5) Trading Name: (6) UAS operator's address: Telephone: Fax: Email:	(7) Operational Points of Contact:
(8) UAS operator's privileges:	
(9) UAS operator registration information:	
(10) Authorised standard scenario(s), or type(s) of operation as applicable:	
(11) Authorised area, zone or class of airspace for operations, if applicable:	
(12) Special limitations or conditions, if applicable:	
This certificate certifies that ..... (4) has the privilege to authorise operations with unmanned aircraft in the specific category as long as it complies with this certificate, the LUC manual, Annex IX to (Basic) Regulation (EC) No .../... [new BR] and its Implementing Rules.	
(13) Date of issue:	(14) Title, name, signature and stamp:

1. Name of the State of the UAS operator.
2. Identification of the issuing competent authority.
3. Reference number, as issued by the competent authority.
4. UAS operator's registered name.
5. UAS operator's trading name. Insert 'DbA' (for 'Doing business as') before the trading name, if applicable.

<sup>2</sup> The term 'specific category' is defined in Regulation (EU) ..... It means a category of UAS operation that considering the risks involved, requires an authorisation by the competent authority before the operation takes place, taking into account the mitigation measures identified in an operational risk assessment, except for certain standard scenarios for which a declaration by the UAS operator is sufficient.

6. The address of the UAS operator's principal place of business. The UAS operator's principal place of business telephone and fax details, including the country code. The UAS operator's email address is to be provided, if available.
7. The contact details include the telephone and fax numbers, including the country code, and the email address at which the accountable manager and the safety manager can be contacted without undue delay.
8. Description of the scope of the operator's privileges in accordance with AMC1 UAS.LUC.060.
9. Insert the registration information in accordance with UAS.SPEC.060.
10. Specify the standard scenario(s) as authorised by the competent authority or the types of operations for which the privileges apply.
11. Specify the geographical area or zone (by geographical coordinates or national or regional boundaries) or the category of airspace, as authorised by the competent authority.
12. Specify special operational limitations.
13. Issue date of the LUC (dd-mm-yyyy).
14. Title, name and signature of the competent authority representative, and an official stamp.

#### **AMC1 UAS.LUC.060 Privileges of an LUC holder**

##### **SCOPE OF PRIVILEGES**

Within the terms of its approval, the LUC holder should be able, without prior approval of the competent authority, to authorise one or more of the following own operations:

1. based on a standard scenario that requires a declaration;
2. based on a standard scenario that requires an authorisation;
3. based on one or more modifications of a standard scenario (variants), which do not involve changes in the concept of operation, the category of UAS used or the competencies of remote pilots;
4. that do not correspond to a standard scenario, but fall within a type of activity already performed by the UAS operator.

#### **GM1 UAS.LUC.060 Privileges of an LUC holder**

For the purpose of granting privileges to LUC applicants, the competent authority may apply a gradual approach. Depending on the operator's past safety performance and safety record over a defined period of time (e.g. previous 6 months), the competent authority may expand the scope of the operator's privileges.

The gradual approach should not be understood to prevent the competent authority from granting privileges with a greater scope to a first-time LUC applicant who has an adequate structure and competent personnel, an effective safety management system and has demonstrated good compliance disposition.

#### **AMC1 UAS.LUC.070(2) Changes requiring prior approval**

A change of the accountable manager is a change that requires a prior approval.