

Guidance on the implementation of Article 16 of Regulation 2019/947

(Authorisation for UAS operations in the
framework of model aircraft clubs and
associations)



Representing Model Flyers in Europe

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Introduction

Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft (“Regulation 947”) also applies to model aircraft operations.

Historically, the safety risks and dangerous accident rate of model aircraft operations have been very low. One of the reasons for this is the safety culture practised by model aircraft pilots and within their model aircraft clubs and associations. The EU legislator explicitly recognised this in Recital 34 of the Basic Regulation¹, which provides the mandate for Regulation 947, as well as in Recital 27 of Regulation 947². Both recitals underline the “good safety record, especially those operated by members of model aircraft associations or clubs”.

Many EASA Member States (hereafter: “Member States”)³ have a long tradition of well-functioning national or regional model aircraft rules. These rules pre-date the emergence of what the general public usually calls “drones” or “multicopters” and the new regulatory needs resulting from the emergence of that new type of unmanned aircraft. The main purpose of the EU rules for unmanned aircraft (“UAS Rules”⁴) is to regulate this new type of unmanned aircraft, while at the same time keeping the flexibility for Member States to maintain their national or regional rules for the operation of model aircraft. In recognition of this, the EU legislation recognises the need for “a seamless transition from the different national systems to the new Union regulatory framework so that model aircraft can continue to operate as they do today, as well as take into account existing best practices in the Member States”⁵.

The possibility to allow model aircraft operations to “continue to operate as they do today” is enshrined in various provisions of Regulation 947. The main tools for doing so are 1) the establishment of geographical zones under Article 15 and 2) the authorisation for model aircraft clubs and associations under Article 16. Article 16 allows the competent authorities, upon request by a model aircraft club or association, to issue an authorisation for UAS operations in the framework of model aircraft clubs and associations, based on “relevant national rules” (Article 16(2)(a)) or on “established procedures, organisational structure and management system of the model aircraft club or association” (Article 16(2)(b)).

This guide seeks to give guidance on the implementation of Article 16 by:

¹ Recital 34 of Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency states that: “Model aircraft are considered to be unmanned aircraft for the purposes of this Regulation and are used primarily for leisure activities. Delegated and implementing acts concerning unmanned aircraft, adopted on the basis of this Regulation, should take into account that such model aircraft have so far had a good safety record, especially those operated by members of model aircraft associations or clubs which have developed specific codes of conduct for such activities. In addition, when adopting those delegated and implementing acts, the Commission should take account of the need for a seamless transition from the different national systems to the new Union regulatory framework so that model aircraft can continue to operate as they do today, as well as take into account existing best practices in the Member States”.

² See box below.

³ The term “Member States” in this paper includes all EASA Member States. For a full list of EASA Member States, see: <https://www.easa.europa.eu/country-category/easa-member-states>. Note that the United Kingdom is not an EASA Member State. This guide however also includes references to the UK, as the UK’s UAV rules are closely based on the EU rules and its Article 16 Authorisation can be a useful reference for EASA Member States.

⁴ In addition to Regulation (EU) 2019/947 of 24 May 2019 these rules also include Regulation (EU) 2019/945 of 12 March 2019 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems.

⁵ See footnote 2.

- Member State authorities; and
- the application for such authorisation by model aircraft clubs and associations.

Extracts of Regulation 947

Recital 27

Since model aircraft are considered as UAS and given the good safety level demonstrated by model aircraft operations in clubs and associations, there should be a seamless transition from the different national systems to the new Union regulatory framework, so that model aircraft clubs and associations can continue to operate as they do today, as well as taking into account existing best practices in the Member States.

Article 15

[...]

2. On the basis of a risk assessment carried out by the competent authority, Member States may designate certain geographical zones in which UAS operations are exempt from one or more of the 'open' category requirements.

[...]

Article 16

UAS operations in the framework of model aircraft clubs and associations

1. Upon request by a model aircraft club or association, the competent authority may issue an authorisation for UAS operations in the framework of model aircraft clubs and associations.

2. The authorisation referred to in paragraph 1 shall be issued in accordance with any of the following:

(a) relevant national rules;

(b) established procedures, organisational structure and management system of the model aircraft club or association, ensuring that:

i. remote pilots operating in the framework of model aircraft clubs or associations are informed of the conditions and limitations defined in the authorisation issued by the competent authority;

ii. remote pilots operating in the framework of model aircraft clubs or associations are assisted in achieving the minimum competency required to operate the UAS safely and in accordance with the conditions and limitations defined in the authorisation;

iii. the model aircraft club or association takes appropriate action when informed that a remote pilot operating in the framework of model aircraft clubs or associations does not comply with the conditions and limitations defined in the authorisation, and, if necessary, inform the competent authority;

iv. the model aircraft club or association provides, upon request from the competent authority, documentation required for oversight and monitoring purposes.

3. The authorisation referred to in paragraph 1 shall specify the conditions under which operations in the framework of the model aircraft clubs or associations may be conducted and shall be limited to the territory of the Member State in which it is issued.

4. Member States may enable model aircraft clubs and associations to register their members into the registration systems established in accordance with Article 14 on their behalf. If this is not the case, the members of model aircraft clubs and associations shall register themselves in accordance with Article 14.

Background: the role of aeromodelling

Model aircraft flying has been practised for well over a century. It's a sport that has a good safety record, with a very few dangerous or lethal accidents, or occurrences with manned aircraft.

Aeromodelling has traditionally played an important role in supporting the broader aviation industry. There are an estimated 800,000 aeromodellers within the Member States. Together, these provide a large body of expertise and a willingness to experiment. The model aircraft community has also traditionally played an important role in the development and deployment of aviation related technologies. Most recently this includes the innovative development and use of materials such as glass and carbon fibres as well as techniques for the construction of ultra-light aircraft. Aeromodelling also supports the development of "green aviation". Model aircraft were the first to experiment with electric drivetrains and motors, which are now widely deployed in the sport, with important benefits for other aviation sectors. Aeromodellers are now also engaging with new technologies such as hydrogen fuels, underlining the role of the sport for the future of aviation. More recently, the aeromodelling community has also shown its military relevance, demonstrated by the active engagement and central role of aeromodellers in the Ukraine⁶.

Importantly, the model aircraft community has always actively sought to engage youth from an early age. It has instilled countless young people in Europe with a passion for aviation, often encouraging them to pursue an aviation-related training and careers. Many pilots, engineers and technicians in the aerospace industry started their involvement in aeronautics by practising aeromodelling.

Aeromodelling also sustains a number of economic actors. This includes commercial producers of model aircraft and model aircraft parts, much of which continues to take place in Europe, especially the higher value models. It also includes model aircraft shops as well as building and repair services. Importantly, aeromodelling also supports a tourism industry. This includes commercial "model flying ranches" as well as slope soaring tourism (hotels, lifts/cable cars, restaurants), for instance in mountainous regions.

Aeromodelling is also a competitive sport, with a very active and international competition scene. Model flyers currently account for half of the 1.5 million aviators represented by the International Air Sports Federation (FAI) and approximately half of the 700+ FAI international air sport competitions are for model flying. The actual number of model flyers will be significantly higher than this as the FAI does not represent them all.

While there are no studies or reliable estimates of the direct and indirect economic and competitiveness benefits of aeromodelling, its continued existence plays an important role for Europe's competitiveness in aviation related industries and technologies. Moreover, the economic contribution of the various "micro-economies" supported by the sport cannot be ignored.

Perhaps most important is the role of aeromodelling in providing a fun and educational sport and hobby that is enjoyed by persons from all backgrounds and genders and in all age-categories, throughout Europe.

Various representatives of the Aeromodelling were involved in the drafting of the EU's UAV Regulation and helped ensure the inclusion of specific provisions to enable continued support for the sport.

The Article 16 Authorisation

Context: current situation as the starting point

The Article 16 Authorisation should be seen in the context of Recital 34 of the Basic Regulation (which provides the mandate for Regulation 947) and Recital 27 of Regulation 947⁷. The aim of Article 16 is to create a possibility for Member States to enable the sport to continue to operate as it does today. The intention of the EU legislator was explicitly not to further restrict or limit model aircraft operations.

Aeromodelling under Article 16 is a self-standing category under Regulation 947. The aim of Article 16 is not to selectively create exemptions from open or specific category requirements, or to use these requirements as the baseline for the requirements under the Article 16 Authorisation. **The starting point for considerations on the contents of the Article 16 Authorisation should thus be the current rules and best practices related to aeromodelling in each Member State.**

The Article 16 authorisation can however take into account open and specific category rules to evaluate and further develop existing national rules. It makes for instance little sense to maintain in an Article 16 authorisation national rules on maximum height above ground or maximum weight that are more restrictive than the requirements of the open category. This may be the case for the maximum height for sailplanes weighing less than 10kg. Under the open category those sailplanes are allowed to operate at a maximum height of 120m above the pilot rather than at a maximum distance of 120 m from the surface.⁸

Although Article 16 provides the basis for Member States to maintain current rules for aeromodelling, it does not provide for an exemption of the registration requirement. Registration is the only new mandatory requirement for aeromodelling under Regulation 247. Article 16(4) does however allow Member States to enable model aircraft clubs and associations to register their members on their behalf, with individual pilots retaining the responsibility as operators under the EU rules.

Issue Authorisations before 1 January 2023

Article 16 Authorisations can be provided by the competent authority of the Member State upon request. The authority does not have to initiate the provision of such authorisation upon its own initiative, nor is it required under EU law to issue such authorisation. Important to note is that, under national law, Member State authorities are usually required to justify any refusal to issue an authorisation and any such refusal to issue an authorisation and its justification may be subject to legal challenges. The initiative for obtaining such authorisation should be taken by model aircraft clubs and associations. In view of the limited staff and financial resources in most aeromodelling clubs and associations, competent authorities may however choose to proactively reach out to relevant clubs and associations and, where possible, support them in the application process.

⁶ Retired US Retired Army Brig. Gen. Steve Anderson in televised interview with CCN on 5 April 2022 explicitly referred to the central role of aeromodellers in Ukraine's defence, referring to "50 teams of model airplane enthusiasts launching 300 missions a day". See:

<https://edition.cnn.com/videos/world/2022/04/05/switchblade-600-drone-weapons-military-strategy-ukraine-russia-newsroom-vpx.cnn>.

⁷ See footnote 1 and 2 above.

⁸ The Annex to Regulation 947 (UAS.OPEN.010), states that "(4) [...] unmanned sailplanes with a MTOM, including payload, of less than 10 kg, may be flown at a distance in excess of 120 metres from the closest point of the surface of the earth, provided that the unmanned sailplane is not flown at a height greater than 120 metres above the remote pilot at any time."

Article 16 Authorisations should be issued before 1 January 2023 at the latest. Article 21 of Regulation 947 states that UAS operations in the framework of clubs and associations may continue under relevant national rules and without an Article 16 Authorisation until that date. From 1 January 2023, these operations fall under the requirements of Regulation 947 (i.e. most operations will need to comply with either open or specific category rules). Although the Regulation does not prohibit the issuance of an Article 16 Authorisation after 1 January 2023, such delay would interrupt model aircraft operations and disrupt the “seamless transition” explicitly sought by the EU rules. In case the 1 January 2023 deadline cannot be met, Authorities may seek alternative solutions to ensure this “seamless transition”.

Recipients of the Article 16 Authorisation

Article 16 of Regulation 947 explicitly refers to model aircraft clubs or associations as the actors who are able to request an Article 16 Authorisation. The organisation of the model aircraft community in individual Member States is very different. Some Member States have a single nation-wide association. Others have multiple national associations, regional associations, associations for specific categories of model aircraft or a combination or none of these. These different associations may be legally connected or separate.

Who an Article 16 Authorisation is issued to will depend on who actually requests such authorisation, as well as the organisational structure of the model aircraft community in a Member State and the preferences of the national competent authority and its model aircraft clubs and associations. The competent authority may decide to provide a single authorisation to multiple associations, a separate authorisation to individual associations, or even separate authorisations to individual clubs.

Box 1: Recipients of the Article 16 Authorisation

Austria grants Article 16 Authorisations to individual clubs, who are supported by the national umbrella association, the Österreichischer Aero-Club (ÖAeC), in this process.

In *Germany*, individual Article 16 Authorisations were granted to the two national aeromodelling associations, the Modellflugsportverband Deutschland (MFSD) (as member of the Deutscher Aero Club (DAeC)) and the Deutscher Modellflieger Verband (DMFV).

Sweden issued a single authorisation that covers both national associations and lists the model airfields to which the authorisation applies.

In *Switzerland*, the Article 16 Authorisation is enshrined in the implementing legislation and granted to the Swiss Aeromodelling Federation, the national umbrella association for the seven regional aeromodelling associations.

In the *United Kingdom*, individual Article 16 Authorisations were granted to the four established associations recognised by the competent authority.

In *France*, the Article 16 Authorisation will be delivered to Federation Française d’AéroModelisme (FFAM) and will cover all its affiliate associations. Non affiliate associations can request individual authorisations with the competent authority.

Process and form of the Article 16 Authorisation

The legal process for obtaining an Article 16 Authorisation and the form of this authorisation is to be determined by the competent authorities of the EASA Member State, following their national rules and legal requirements.

In most countries, individual authorisations will be provided to the applicant aeromodelling associations or clubs by the competent authorities following national rules for administrative authorisations in the field of aviation. In some countries the competent authorities may choose to directly include the Article 16 Authorisation in the national legislation for implementing Regulation 947 (for instance Switzerland).

Issues to address in the Article 16 Authorisation

In most Member States, legislation and rules on the operation of model aircraft have traditionally been included in 1) national or regional legislation; 2) authorisations for clubs or associations; and 3) operational rules from clubs and associations. The way that these rules were set out in the past can provide an important source of inspiration for the decision on which issues should be included in the Article 16 Authorisation.

When applying for or preparing to issue an Article 16 Authorisation, the Member State authorities as well as the clubs and associations should explain their preference and decide 1) which issues need to be regulated; and 2) where these issues should be regulated (national/regional legislation, the authorisation or in the rules of the clubs or associations).

The *Annotated Table of Contents for an Article 16 Authorisation* contained in the Annex to this guide sets out an indicated list of issues that can be addressed in the Article 16 Authorisation. Not all Authorities will want to address all of these issues. Others will, for national reasons, want to address additional issues. Importantly, for each of the issues listed in the Annex, the authorities can also decide to address them in the national implementing legislation or to leave the issues to be regulated in the rules of the clubs or associations. These rules can be an integral part of the authorisation (for instance as an Annex), or can be drafted and published under the responsibility of the recipient of the authorisation.

Box 2: What to regulate where?

In *Germany*, most operative requirements are set in the rules of the national associations, not the actual text of the Article 16 Authorisations. These rules were submitted to the competent authority as part of the authorisation process and the authorisations require these rules to be observed.

In *Sweden* the two national associations received a single Article 16 Authorisation, which lists the basic requirements as well as the registered airfields and their height restrictions. Most of the operating rules are defined in a common set of “safety rules for model flying in Sweden”, developed by the two associations and approved by the national authorities.

Switzerland has decided to fully integrate the Article 16 Authorisation in the legislation implementing Regulation 947 and will not issue a separate administrative authorisation to the national aeromodelling federation.

In the *United Kingdom*, each of the recognised model flying associations received their own Article 16 Authorisation, which largely encapsulates their long-established operating requirements.

Article 16(2)(a) or (b)

Article 16(2) allows the Authorisation to be issued on the basis of (a) relevant national rules, or (b) established procedures, organisational structure and management system of the model aircraft club or association.

Whether an Article 16 Authorisation should be requested and issued on the basis of Article 16(2)(a) or (b) of Regulation 947 depends on the current situation in and preferences of the Member State and its clubs and associations. Member State authorities may also decide to simply base an authorisation on Article 16, without specifying whether they apply paragraph (a) or (b).

Article 16(2)(a)

Paragraph (a) allows a Member State to continue national rules and leaves it to Member States to decide whether and what type of oversight or responsibility they attribute to the clubs and associations obtaining the authorisation. Paragraph (a) thus provides maximum freedom for Member States, clubs and association to decide how to design the exemption under Article 16. The reference to “national” does not preclude the use of regional or local rules. The term “rules” can include legislation as well as best practices used by clubs and associations.

Article 16(2)(b)

Article 16(2)(b) is more prescriptive and sets out four explicit functions and responsibilities to be given to clubs and associations obtaining an Article 16 Authorisation based on this paragraph:

- An obligation to inform their members of the rules (“[ensuring that] (i) remote pilots operating in the framework of model aircraft clubs or associations are informed of the conditions and limitations defined in the authorisation issued by the competent authority”);
- An obligation to train their members (“[ensuring that] (ii) remote pilots operating in the framework of model aircraft clubs or associations are assisted in achieving the minimum competency required to operate the UAS safely and in accordance with the conditions and limitations defined in the authorisation”);
- An obligation to oversee that their members comply with the requirements of the Authorisation (“[ensuring that] (iii) the model aircraft club or association takes appropriate action when informed that a remote pilot operating in the framework of model aircraft clubs or associations does not comply with the conditions and limitations defined in the authorisation, and, if necessary, inform the competent authority”); and
- An obligation to provide information to the authorities (“[ensuring that] (iv) the model aircraft club or association provides, upon request from the competent authority, documentation required for oversight and monitoring purposes.”)

An authorisation under paragraph (b) is thus more specific in its training, oversight and information requirements for clubs or associations receiving the Authorisation. In a number of Member States this may be a role that clubs and associations have not had in the past and which they may not be able (or willing) to provide. For some it may also imply new legal liabilities and possibly require insurance to cover those liabilities (for instance: a club may be held (co-)liable for the damages of an accident if it did not undertake sufficient action to prevent this accident from happening). In a situation where model aircraft clubs and associations are fully or mostly run by volunteers and operate on very small budgets, the requirements under Article 16(2)(b) may be challenging to meet.

Both sub-paragraph (a) and (b) allow the Article 16 Authorisation to not only build upon prior national rules, but also on best practices within clubs and associations. A Member State can choose

to delegate a large part of the development and codification of safety rules and best practices to clubs and associations, limiting the contents of the Article 16 Authorisation to key issues only.

“In the framework of”

Regulation 947 consistently refers to “UAS operations *in the framework of* model aircraft clubs and associations”. The legislator’s deliberate choice for the term “in the framework of” rather than “members of” recognises that there are situations in which a Member State can extend the applicability of the Article 16 Authorisation beyond the members of model aircraft clubs and associations. Whether and how this is done depends on how the sport is practiced and organised in each Member State.

Some Member States have a single national association that counts the vast majority of model aircraft pilots as its members. There are however also countries with multiple associations, as well as countries that have a large number of model aircraft pilots who are not members of a club or association, but who do practice a safety culture. Some Member States benefit from international model aircraft tourism or have a model aircraft pilot community that is very active in organising international competitions.

Which pilots fall within this “framework” is for each Member States to decide. The central criterion in this choice is that the competent authority issuing the Authorisation is sufficiently confident that the pilots included in the “framework” are aware of and will follow the requirements of the Article 16 Authorisation.

In this context, the Article 16 Authorisation could include the following categories of pilots:

- *“Members of”*: members of the club or association that has requested the authorisation – this category should be included in all Article 16 Authorisations.
- *Guest pilots*: pilots at competitions or visitors invited by a club may not always be a member of the club or association that holds the Article 16 Authorisation. The competent authority can however decide to include such guests in the scope of the Authorisation. Alternatively, the club or association can create a temporary guest membership.
- *Model aircraft tourism*: a number of Member States are important destinations for model aircraft tourists, including those with a large slope soaring community. These tourist destinations are not necessarily operated by a club or association, but may for instance be managed by a hotel or restaurant or include commercial flying sites. The Article 16 Authorisation can explicitly provide for such tourists, for instance by including specific sites, regions or tourism infrastructure within the scope of an Authorisation.
- *Non-organised pilots*: a number of Member States have a large number of model aircraft pilots who are not organised in a club or association but legally and safely practice their hobby on private or public sites.
- *Others*: specific situations in a Member State may also merit adding other categories of pilots under the Article 16 Authorisation.

Different options are available to ensure that pilots in these different categories are aware of the applicable rules. This includes for instance a self-declaration that the pilot is aware of and will adhere to the applicable rules, a certificate of competence (issued following online training), or a combination of both.

In case an Article 16 Authorisation does not automatically include all of the categories above, the Member State as well as clubs and associations should consider how additional categories can nonetheless benefit from flying under the requirements of the Authorisation. This includes for

instance providing temporary membership options for guests, tourists and foreign competition pilots.

Important to note is that a Member State can also decide to include for instance important aeromodelling tourism sites through the designation of geographical zones under Article 15 of Regulation 947.

Box 3: “In the framework of” – which operators are covered by the authorisation?

In *Germany*, the Article 16 Authorisation covers the members of the association receiving the authorisation. Both associations provide for the recognition of each other’s members. In addition, the MFSD provides for a 3-month guest membership (renewable once each year) for visiting pilots.

In *Switzerland*, the Article 16 Authorisation for the Swiss Aeromodelling Federation covers the members of the Federation. Non-members can however operate under the conditions of the authorisation if they are familiar with the ten points of the association’s code of good practice⁹ and carry a written confirmation that they are aware of and will respect this code.

In the *United Kingdom*, the Article 16 Authorisation for each association is applicable only to the members of that association. However, non-members and model flyers visiting from overseas are able to operate within the terms of an authorisation by becoming temporary members of that association and complying with the requirements.

Model aircraft

Article 16 limits the authorisation provided under that Article to “activities” in the framework of model aircraft clubs and associations. Regulation 947 neither defines “model aircraft” or “aeromodelling”, nor defines the type of unmanned aircraft that can be flown under such authorisation.

Any definition or categorisation of model aircraft or aircraft categories only makes sense if a Member State seeks to either 1) limit or specify the type of model aircraft that can be flown under the Article 16 Authorisation; or 2) define specific requirements for the operation of specific types of model aircraft under the Article 16 Authorisation. A Member State that sees no need for such limitations or specific rules does not need to define or categorise model aircraft and can decide to include all operations with unmanned aircraft by authorised operators under the Article 16 Authorisation.

“Model aircraft” v. “drones”

The main differences between the operation of “traditional” model aircraft and what the general public often refers to as drones are:

1. Purpose: model aircraft are operated for the purpose of sport, recreation, education or demonstration;
2. Visual line of sight: model aircraft are usually operated within visual line of sight;

⁹ Code of Good Practice of the Swiss Aeromodelling Federation: <https://www.modellflug.ch/documents/GB-SMV%20Code%20of%20Good%20Practice.pdf>

3. **Autonomous capability:** the purpose of operating model aircraft is usually the skill and pleasure of controlling the aircraft. Autonomous capability is usually restricted to flight stabilisation or only used in emergencies.

Important to note however is that aeromodellers have and continue to play an important role in the development and deployment of autonomous capability as well as first person view technology. These technologies may play an increasing role in the future of aeromodelling or specific branches of aeromodelling. Any difference in treatment of the use of these technologies compared to “traditional” model aircraft should therefore not only take into account safety, privacy and security concerns of Member States, but also the important role that aeromodellers play in the further development and deployment of these technologies and the share of model aircraft pilots using these technologies.

Categories of model aircraft

The clubs and associations seeking an Article 16 Authorisation, as well as the competent authority providing this Authorisation will need to consider whether the Authorisation applies to all or to certain categories or types of unmanned aircraft. Where deemed necessary, the Article 16 Authorisation or the rules of the associations may also set different requirements for different categories of unmanned aircraft or related to specific characteristics of a model aircraft.

There are many different ways of distinguishing different types of model aircraft and model aircraft operations. In view of the wide diversity and continuous evolution of the sport, any categorisation may be difficult and only makes sense if the Member State seeks to introduce specific requirements for specific types of model aircraft.

The following non-exhaustive list contains a number of possible categories of model aircraft operations:

- **“Conventional” model aircraft:** these are unmanned aircraft used for sporting and recreational purposes, flown within the visual line of sight, by direct control inputs made by the remote pilot and without autonomous capability other than for flight stabilisation purposes or emergency (e.g. “return to home”) functions.
- **Free flight model aircraft:** A model aircraft that is not remotely piloted. A flight termination device (activated autonomously (height, distance or time) or by the pilot) may be fitted.
- **Control line model aircraft:** A model aircraft that is controlled in flight by one or more lines, attached to a handle, which work the required flight functions. The aircraft is connected to the remote pilot by these lines and so its flight is constrained to the surface of a hemisphere around the remote pilot with a radius equal to the length of the lines.
- **Round-the-pole model aircraft:** A model aircraft that is tethered to a fixed point by one or more lines so that its flight is constrained to the surface of a hemisphere around the tether point with a radius equal to the length of the lines.
- **First person view model aircraft:** A number of model aircraft clubs and associations also include members operating unmanned aircraft beyond the visual line of sight of the pilot, using first person view (using images provided by cameras aboard the aircraft).
- **Autonomous model aircraft:** A number of model aircraft clubs and associations also include members operating unmanned aircraft with autonomous flight capability.
- **Fuel type and motorisation:** although electric motors now constitute the common propulsion type, specific categories of model aircraft and competition categories continue to use combustion engines or jet engines. In addition to that, gliders without any type of

propulsion, or with electric propulsion only to be used for brief periods to gain altitude or in emergency situations constitute a large share of model aircraft.

Important to note is that model aircraft operated indoors, or in a location in which there is no possibility of it going into the 'outside' airspace (e.g. inside a closed building or mine), do not fall within the scope of Regulation 947.

Weight

The Article 16 Authorisation will need to define the maximum take-off mass (MTOM) of a model aircraft. The Article 16 Authorisation may also distinguish different weight categories with corresponding requirements.

Regulation 947 states that the age and registration requirements do not apply for unmanned aircraft with a MTOM of less than 250gr (and without a camera). It does not prescribe a weight limit for aircraft falling under the Article 16 Authorisation.

In the majority of Member States, model aircraft with a MTOM of less than 25kg are allowed to be operated without special requirements. In Switzerland this limit is 30kg. Aircraft with a higher MTOM are required to pass a certification process before they are allowed to operate under the Article 16 Authorisation. In some Member States this certification process has been delegated to the associations that have received the Article 16 Authorisation.

Box 4: Weight-related requirements

In *Germany*, the Article 16 authorisations set incremental requirements for specific weight categories. There are no requirements for model aircraft with a MTOM of less than 250gr without a camera. Models heavier than 250gr or with a camera require registration of the operator. Models heavier than 2kg in addition also require a certificate of competence for the pilot. Models heavier than 12kg can in addition only be operated on a registered airfield. Models between 25 and 150kg must in addition also be certified. Certification has been delegated to the associations.

In *Sweden*, the authorities can approve the operation of model aircraft heavier than 25kg on specific airfields.

In *Switzerland*, the Article 16 Authorisation for the Swiss Aeromodelling Federation covers model aircraft with a MTOM up to 30kg. Aircraft with a higher MTOM are allowed to operate under the Authorisation once they have gone through a certification process. The Swiss Federal Office of Civil Aviation had delegated this certification process to the national association.

In the *United Kingdom*, three of the associations were granted Article 16 Authorisations which permit the operation of model aircraft with a MTOM up to 25Kg. The Large Model Association was granted an Article 16 Authorisation covering the approval and operation of model aircraft with an MTOM up to 150Kg.

In *France*, model aircraft with MTOM over 800g operated on non-exempted airfields must be equipped with a remote id device for national security purpose. This pre-existing requirement is not part of the article 16 authorisation. Pilots not belonging to a club or association affiliated to a national federation must fit such device regardless of the location where the aircraft is operated. Aircraft with a MTOM over 25 kg require certification by competent authority. The operation of aircraft with a MTOM over 150 kg is not allowed under the article 16 authorisation.

Operator registration

Article 16(4) of Regulation 947 allows Member States to “enable model aircraft clubs and associations to register their members into the registration systems established in accordance with Article 14 on their behalf”. A number of Member States and associations have made use of this possibility through an automatic or regular exchange of data between the membership database and registration database. Doing so may require an adjustment in the association’s rules governing their management of membership data or the consent of their members.

Box 5: Registration

Regulation 947 distinguishes between "pilots" and "operators". Most of the legal requirements are attached to the "operator". For "pilots" the requirements are mostly limited to age and competence, as well as respecting legal requirements during flight. The reason for this is that the legislation was mainly written keeping drone service providers in mind. Such service providers are often a company (which carries the main responsibility and is owner of the drone) with multiple pilots. In the case of aeromodelling the operator (owner) and pilot of the plane are usually the same person. The registration obligation should thus rest upon that person. There are however situations in which the club or association may be the operator. This includes for instance for a club's training aircraft, or models flown by minors (if they or their guardian cannot register as operators).

Most clubs and associations have a database with the registration details of their members. This data can be used (with consent of the members and respecting data protection regulations) to register members on their behalf. This avoids pilots having to register themselves. It also helps ensure that the data in the registration database remains up-to-date.

Pilot/operator requirements

Age

Article 9 of Regulation 947 sets minimum age requirements for the unsupervised operation of unmanned aircraft in the open category at 16 years and allows a Member State to lower this to 12 years. Article 9(5) of Regulation 947 states that “Member States may define a different minimum age for remote pilots operating in the framework of model aircraft clubs or associations in the authorisation issued in accordance with Article 16”¹⁰.

Under the Article 16 Authorisation the competent authority has various options in relation to minimum age:

- No minimum age requirement;
- A minimum set in a qualitative rather than in a quantitative manner. For instance, instead of defining a number of years, the authorisation can require that the person needs to be sufficiently mature to safely operate a model aircraft without supervision;
- A minimum age requirement between 0 and 16 years;
- Minimum age requirements for different categories or characteristics of unmanned aircraft (e.g. weight, propulsion type).

¹⁰ Article 9(5) uses the wording “different minimum age”. This is different from Article 9(3) and (4) which say “lower the minimum age”. The term “different minimum age” applies to the entire concept of minimum age, covering all paragraphs of Article 9, including the exemptions under 9(2), not just the number of years. This means that Article 9(5) allows a Member State to define every element of the minimum age requirements (including related to the age of any supervisor) in the authorisation under Article 16, not just “lower” it, as under (3) and (4).

In deciding on the minimum age requirement, as well as any minimum age requirements for supervising persons, the competent authority should take into account the practice in the Member State to date, as well as the advantages and risks of supporting model aircraft pilots from an early age. Most Article 16 Authorisations issued so far have very low or no age limits. The reason for this is that the model aircraft community has traditionally been very active in recruiting and training young pilots as well as in supervising young and new pilots when and where necessary. The general experience is that young pilots are often very quick learners and highly skilled. Moreover, the long history of model aircraft operations does not show a higher involvement of young pilots in serious incidents.

Box 6: Age limits

In *Germany* the rules of the national associations define age requirements for different weight categories and depending on whether operations take place on an authorised airfield. Younger pilots may fly under supervision of qualified pilots older than 16 years or with permission of the owner of a certified airfield.

In *Sweden* there is no age limit for pilots who are member of a club and who operate model aircraft from a model airfield approved under the Article 16 authorisation. The club is required to provide training and mentorship until the pilot reaches the age of 18.

In *Switzerland* the Article 16 Authorisation does not define age limits or supervision requirements – model aircraft can be operated by pilots at any age.

In the *United Kingdom* there is no minimum age to be the remote pilot of model aircraft with a MTOM less than 25kg, but the minimum age to register with the competent authority as an 'operator' is 18. Pilots under 18 years old must use the operator registration of someone over 18 (such as a parent or other club member).

In *France*, there is no age limit for operations under the Article 16 authorisation. Pilots older than 14 have to follow online training and register as UAS operator.

Competency Requirements

Article 8(3) requires the Article 16 Authorisation to include minimum competency requirements. These can vary depending on the national situation, on whether the competent authority and association see the need to anchor these in the Authorisation and on the level of detail that is found to be appropriate.

Before the entry into force of Regulation 947, a number of Member States did not have competency requirements. Some associations encourage clubs to decide themselves if or whether they want to set any competency requirements, instead defining more general safety guidelines. Other Member States but also associations already had a system of competency tests or training requirements in place, either under national legislation or under the association's rules.

Regulation 947 in principle allows competency requirements to be very short and simple or in the form of more comprehensive training and testing. A short and simple competency requirement could for instance include a requirement for the pilots to be informed of the requirements of the authorisation and a requirement for pilots to ensure that they have the necessary competency to operate their aircraft safely. A more comprehensive testing and training can for instance be based on national or association-based systems of competency requirements already in place, resulting in

a specific certificate of competence. Alternatively, Member States can also decide to adapt open category online testing and training for operations under the Article 16 Authorisation.

Authorisations issued under Article 16(2)(b) also need to require associations and clubs to assist their members in “achieving the minimum competency required to operate the UAS safely and in accordance with the conditions and limitations of the authorisation”. Associations that request or obtain such Authorisation are thus required to set up a programme or training options to support their pilots in achieving the minimum competency requirements. Regulation 947 does not contain such requirement for Authorisations issued under Article 16(2)(a).

Box 7: Competency requirements

In *Germany*, model aircraft pilots are required to complete an online training course and test. Each association provides its own training and test, which is based on the rules of the association.

In *Sweden*, model aircraft operations outside approved airfields take place under the open category and require an open category training and test. Pilots operating on approved model airfields are exempted from this requirement.

In *Switzerland*, the Article 16 Authorisation requires pilots to know and respect the code of good practice of the Swiss Aeromodelling Federation. No certificate of competency is required.

In the *United Kingdom*, pilots are required to take an online test. The test can be taken via the competent authority or the model flying associations, where the questions are tailored to be more directly relevant to model flying and reflect the terms of the Article 16 Authorisation.

In *France*, online training, which can be delivered by FFAM, is mandatory for pilots over 14 years old.

Other pilot/operator requirements

An Article 16 Authorisation may also set requirements for the pilot or operator other than age and competency. This can for instance include requirements concerning the use of alcohol as well as requirements concerning physical and mental health.

Liability insurance

EU law¹¹ requires model aircraft with a MTOM of 20kgs or more to have a liability insurance for an amount of 750.000 SDR (Special Drawing Rights¹²) (approximately 1 million Euro). A number of Member States also have insurance requirements in place for model aircraft with a lower MTOM. In some Member States “standard” personal or family liability insurances automatically include model aircraft below a specific weight. In addition, many model aircraft associations provide insurance for their members as part of their membership fee, or allow such insurance, or higher coverage insurance, to be purchased separately.

Regulation 947 does not require the Article 16 Authorisation to include insurance requirements. Some Member States already have an insurance requirement integrated in the national legislation

¹¹ Article 2(2)(b) of Regulation (EC) No 785/2004 of the European Parliament and of the Council of 21 April 2004 on insurance requirements for air carriers and aircraft operators.

¹² The SDR is an international reserve asset, created by the IMF, the value of which is determined by a basket of five currencies - the U.S. dollar, the euro, the Chinese renminbi, the Japanese yen, and the British pound sterling.

concerning unmanned aircraft. Whether or not a separate or additional insurance requirement will need to be integrated into the Article 16 Authorisation is up to the Member State to decide and depends on the national situation and regulatory practices or requirements.

Maximum operating heights

Regulation 947 does not define or require the definition of maximum operating heights for operations under an Article 16 Authorisation. Whether or not such maximum operating heights should be included depends on national conditions and preferences, as well as whether any such maximum heights were already in place before the Authorisation was issued.

It should be noted that blanket strict height limits are likely to seriously jeopardise the future of aeromodelling in a Member State without necessarily contributing to aviation safety. A general 120m height limit makes a large share of aeromodelling activities, including related competitions, impossible. Such limit is likely to drive part of the sport into “illegality”, with adverse consequences for aviation safety and victims of incidents (insurance does not usually cover damages resulting from illegal activities). For most Member States, the public interest will benefit more from a framework with permissive boundaries that enable aeromodelling to co-exist with other airspace users. For Member States considering a general height limit, this could for instance include exempting recognised airfields or specific locations from strict height limits, or setting less restrictive height limits for such airfields or locations.

Box 8: Maximum operating height

In *Germany* there are no specific height restrictions for operations under the Article 16 Authorisations. General and local airspace restrictions must however be respected. Flights by operators without a certificate of competence provided by one of the Associations are limited to 120m.

In *Sweden* the Article 16 Authorisation lists the maximum height for individual model airfields (with operations on some airfields allowed up to 450m). The general height restriction for operations outside registered airfields is 120m.

In *Switzerland* there is no general maximum operating height for the operation of model aircraft. Height restrictions do however exist in air traffic control zones (150m), with the possibility for exemptions by the airport management or the air traffic control authorities.

In the *United Kingdom*, there is no maximum operating height for the operation of model aircraft with an MTOM of less than 7.5Kg. For models with an MTOM exceeding 7.5Kg, the default height limit is 120m. However, the Article 16 Authorisations issued to some associations includes provision for the association to permit the flight of models with an MTOM exceeding 7.5Kg at heights above 120m. Permission from registered aerodromes is required to operate within their flight restriction zone at any height.

In *France*, the default maximum height is 150m for licensed airfields (AIP ENR 5.5), but this can be adjusted (higher or lower) depending on the location.

Location of operations

Regulation 947 does not require the Article 16 Authorisation to define requirements related to the location of model aircraft operations. Whether such requirements should be set, and what these should contain, is up to Member States to decide.

Model Aircraft Airfields

There are significant differences between Member State requirements concerning the use of official (permitted) airfields for model aircraft. These differences can to a large extent be explained by the broader context of national planning laws, the availability and protection status of green areas, as well as the model aircraft flying tradition in that Member State. In some Member States aeromodelling has traditionally been mainly practiced on licensed club airfields. Other Member States have a long tradition of “green field” flying. This includes in particular also Member States with an important slope soaring tradition, where glider pilots operate from local hills or mountains.

As a result, some Member States allow the operation of model aircraft anywhere (usually with permission of the owner or tenant of the land when this is private property). Others seek to concentrate model aircraft operations on official airfields. Some Member States have different rules for the operation of model aircraft outside licensed airfields than for the operation of model aircraft on such airfields.

Whether and how the Article 16 Authorisation defines requirements related to the operation of model aircraft on licensed airfields and elsewhere depends on the current situation in each Member State and is for each Member State to decide.

Distance requirements

Most Member States have defined minimum distance requirements in relation to specific sites (airfields, emergency operations, protected areas) or groups of persons. Such distance requirements can be included in the national legislation, the Article 16 Authorisation or in the operating guidelines of the clubs or associations covered by the Authorisation.

Box 9: Distance requirements

In *Germany*, the rules of the associations set specific minimum distances to “assemblies of people” and population centers for general model aircraft operations and specific categories of aircraft.

In *Sweden*, open category requirements, including distance requirements, apply to flights outside approved airfields. These include a prohibition to fly within a 1 km radius of heliports, within 5 km of airport runways where some form of Air Navigation Service is provided, within 150 m of residential, business, industrial and recreational areas as well as close to assemblies of persons not involved in the flight operation (horizontal distance at least equal to the flying altitude should be maintained).

In *Switzerland* operations with model aircraft heavier than 250gr are not allowed within 5km of an airport or heliport, 150m above ground within the air traffic control zone (CTR) of an airport, near the deployment of emergency services and in protected areas (including nature reserves). These limitations are defined in national and regional legislation.

In the *United Kingdom*, the Article 16 Authorisations define separation distances from uninvolved persons and “assemblies of people”. For example, aircraft with an MTOM between 250g and 7.5Kg shall not be flown:

- a) Within a horizontal distance of 30m of “assemblies of people”;
- b) Within 30m of any “uninvolved person”. This distance may be reduced to 15m for take-off and landing if required for practical operations and there are locally applied mitigations to protect uninvolved persons, following a local risk assessment.

In *France*, there are no general requirements. Any restrictions are decided in the context of the discussions and the decision on specific sites and activities for AIP ENR 5.5 applications.

Requirements for the operation

The Authorisation may also include pre-flight requirements, such as the requirement to ensure that a pilot obtains updated information about relevant airspace restrictions, local operational restrictions as well as checks to help ensure the safety of the model.

The Authorisation may furthermore define in-flight requirements, such as compliance with the relevant rules and regulations (including flight restrictions and the requirements of the Authorisation), avoiding collisions or restrictions in relation to the operation of emergency response services.

Rather than defining additional issues in detail in the Authorisation, the Member State may also decide to leave the definition of additional requirements to the association, in their safety rules or guidelines.

Dropping of materials

Article 4(1)(f) of Regulation 947 states that operations under the open category are not allowed to drop any material during flight. Regulation 947 does not require such restriction for operations under an Article 16 Authorisation.

The deliberate dropping of materials is an important part of aeromodelling. The dropping of parachutes, including remote controlled parachutes, is commonly practiced. Some clubs have “target practice” competitions, which involve dropping an object as close as possible to a “target”, also to train and test skills of their pilots. Model aircraft displays often include “candy drops” for young spectators. Towplanes regularly drop their towlines before landings to avoid them getting stuck in the vegetation around the airfield and thus helping ensure a safe landing of the model aircraft.

A general prohibition to drop materials for operations under an Article 16 Authorisation makes little sense and may even increase the risk of model aircraft operations (e.g. prohibiting tow planes from dropping their tow lines). Any limitations to the dropping of materials should take into account the specific characteristics of model aircraft operations as well as general public safety considerations in each Member State.

Reporting and oversight requirements

Article 18(h) of Regulation 947 requires Member States to “develop a risk-based oversight system for model clubs and associations that hold an authorisation referred to in Article 16”. Other EU legislation sets out reporting and investigation requirements for accidents and occurrences with unmanned aircraft that lead to serious injuries, fatalities or involve manned aircraft¹³.

In response to these requirements, the Article 16 Authorisation may prescribe reporting methods or tools for accidents with model aircraft that lead to serious injuries or fatalities, or occurrences

¹³ Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation; and Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation.

involving manned aircraft. Alternatively, the Article 16 Authorisation may require the development of such tools or reporting methods by involved clubs and associations.

Validity of the Article 16 Authorisation

Regulation 947 does not set a minimum or maximum time for the validity of the Article 16 Authorisation – with the exception that it should be issued before 1 January 2023 to ensure the seamless transition into the EU rules. Member State Authorities may choose to issue a permit with indefinite duration, one that is regularly updated, or a permit that is valid for a set time only.

Annex: Annotated Table of Contents for an Article 16 Authorisation

Note: this is a non-binding and non-exhaustive list of issues. Some Member States will only choose to address a small number of the points below. Others will want to expand the list with further items. Some Member States will want to include some of the points below in the national legislation rather than in the Article 16 Authorisation. Others will leave some of the points below to be defined in rules or safety guidelines established by clubs and associations.

Coverage of the Authorisation: operators

The Authorisation should define its addressees. This should include, as a minimum, the members of the recipient of the Authorisation. It can also include rules for guest pilots, tourists, competitions, as well as for including non-organised pilots.

Coverage of the Authorisation: aircraft

The authorisation can define the type of model aircraft that can be operated under its rules, as well as specific requirements for specific categories or characteristics of aircraft.

Registration

Modalities for allowing the recipient of the authorisation to register its members on their behalf.

Pilot Requirements

This can include no minimum age requirement, a qualitative rather than a quantitative age requirement (“sufficiently competent”), a minimum age between 0 and 16 years or age requirements for different categories or characteristics of model aircraft (weight, propulsion, etc.), as well as requirements for the supervision of under-age pilots. It can also include requirements related to the health and condition of the pilot.

Pilot Competence

This can include for instance knowledge of the internal rules of the recipient of the authorisation or an online training resulting in a certificate of competence. It can also include the requirement for the recipient of the authorisation to inform and train its members.

Operating height

This can include the requirement to respect existing operational height limits, height limits in specific zones (e.g. near airports), height limits for specific categories of aircraft (e.g. gliders when slope soaring) or specific weight categories.

Weight (MTOM)

Most Member States exempt model aircraft weighing less than 250gr from various requirements (including age, training and competence, as well as location of operations). Most Member States also require model aircraft above a specific weight (generally 25kg) to be certified. A number of Member States allow model aircraft between 25 and 150kg to be certified by the recipient of the Article 16 Authorisation.

Location/distance requirements

This can include requirements for the operation outside and on registered airfields. It can also include requirements for minimum distances from uninvolved persons and assemblies of people. It

can also include requirements for minimum distances from population centers, as well as requirements for specific type of aircraft or propulsion types (e.g. combustion engines or jets).

Operational requirements (pre- and during flight)

This can include the requirement to ensure that a pilot obtains updated information about relevant airspace restrictions, local operational restrictions as well as checks to help ensure the safety of the model. It can include requirements for the flight, such as priority rules in relation to manned aircraft. It can also include rules in relation to the dropping of dangerous materials.

Oversight and reporting

This may include the use or development of reporting methods or tools for accidents with model aircraft that lead to serious injuries or fatalities, or occurrences involving manned aircraft.