International Civil Aviation Organization
South American Regional Office
Sixth Virtual Meeting of the UAS/RPAS Focal Points of the SAM and SRVSOP States (Lima, Peru, Virtual, 03 March 2022)

Agenda item 03: Progress achieved in the developing of the CONOPS for unmanned aircraft (UA)

FINAL DRAFT OF THE UA CONOPS

(Presented by the rapporteur of the Working group CONOPS UA)

SUMMARY

This working paper presents, for acceptance by the Sixth Virtual Meeting of the UAS/RPAS Focal Points of the SAM and SRVSOP States, the concept of operations (CONOPS) for unmanned aircraft (UA) that incorporates the comments sent by the SAM and SRVSOP States.

On 7 February 2022, the draft proposal for the CONOPS UA was sent to the UAS/RPAS Focal Points of the SAM and SRVSOP States for analysis and comments. The English version of this CONOPS UA was subsequently sent to Guyana and Suriname.

At the request of a State, the deadline for submitting comments was extended to 18 February 2022 instead of 14 February 2022.

On 23 February 2022, a virtual meeting was held with Colombia to analyse their comments, in order to achieve some consensus on the contribution to the document. In order to have a better vision on the subject, the Secretariat of the ICAO South American Regional Office (SAM) was asked to participate in the aforementioned meeting to have a better understanding of the work carried out, the scope of the UA model regulations and the standards and recommended methods (SARPs) promulgated by ICAO in its Annexes to the Chicago Convention and, in this way, be able to agree with the bases of the CONOPS proposal for UA.

References:

- ✓ Document 10019 – Manual on Remote piloted aircraft systems (RPAS)
- ✓ Concept of operations for Remote piloted aircraft systems (RPAS) – International IFR operations, non-edited ICAO version
- ✓ Concept de operations for EASA drones
- ✓ ICAO unmanned aviation
- ✓ Contributions from the States

ICAO Strategic Objectives	Safety

1. Introduction

1.1 During the First Meeting of the UAS/RPAS Focal Points of the SAM and SRVSOP States (RVPF-UAS-RPAS/1), held virtually on 26 February 2021, the Secretariat presented under Agenda Item 1, a proposal for the work programme to initiate the development of actions aimed at the implementation of UAS/RPAS operations in the SAM Region.

1.2 In this regard, the Secretariat proceeded to make a presentation on the work agenda and explained, in a general way, the documents that would be part of the regional strategic planning, among them, the following:

- ✓ the concept of operations (CONOPS) for unmanned aircraft (UA);
- ✓ the CONOPS of remotely piloted aircraft systems (RPAS) for international operations under instrument flight rules (IFR); and
- ✓ the CONOPS for Unmanned Aircraft Systems (UAS) Traffic Management (UTM).

1.3 Regarding the CONOPS UA, the Secretariat presented to the Meeting the following proposal for topics that would be analysed by the designated working group:

- ✓ Background;
- ✓ ICAO unmanned aircraft (UA) classification;
- ✓ the concept of operations for each UA classification;
- ✓ the development of regulations and guidance material for each type of operation;
- ✓ safety management in UA operations;
- ✓ future challenges;
- ✓ planning and implementation; and
- ✓ other issues that the Meeting considers necessary to address.

1.4 Likewise, at the Fourth Meeting of the UAS/RPAS Focal Points of the SAM and SRVSOP States (RVPF-UAS-RPAS/4), held virtually on 4 November 2021, the Meeting considered necessary, among other tasks, to define first the technical requirements of the open category in a regional context to later be able to define the technical requirements of the specific and certified categories.

1.5 The Meeting also commented that these definitions would allow the UAS/RPAS Focal Point working teams to develop CONOPS for unmanned aircraft (UA), UA traffic management (UTM) and for remote piloted aircraft systems (RPAS). In the same sense, the Meeting considered that the technical requirements of the open, specific and certified categories would allow the development and implementation of regional and national regulations.

1.6 Finally, the Fourth Meeting of the UAS/RPAS Focal Points considered necessary to first complete the surveys for the definition of the open category and the LAR UA regulatory framework, to subsequently develop the CONOPS for unmanned aircraft (UA), the LAR 100 and 101 and Advisory Circular 101-1, for which it agreed on *Conclusion RVPF-UAS-RPAS/4-04 - Approval of the work schedule for the final definition of the open category, definition of the LAR UAS regulatory framework, development of the CONOPS for unmanned aircraft (UA), and development of the LAR UAS regulation(s) and related CA* (for further details, refer to Conclusion RVPF-UAS-RPAS/4-04 in the RVPF-UAS-RPAS/4 Report).

1.7 Based on the aforementioned conclusion, the designated working group prepared the UA CONOPS proposal, which was presented in Spanish and English to the UAS/RPAS Focal Points for analysis and comments.

1.8 In accordance with the responses sent by the States, the CONOPS UA proposal was modified, including comments from Brazil, Colombia, Argentina, Cuba and Venezuela. These comments, which arrived within the agreed deadlines, made it possible to develop a final consensus document.

2. Analysis

2.1 The group's work consisted in carrying out an analysis of the related ICAO and EASA CONOPS before developing the UA CONOPS proposal for the SAM Region. The development of the proposal took into account the evolution of the concepts and the reality of the SAM States. Likewise, the proposal included the technical requirements that the UAS/RPAS Focal Points defined for the open category accepted by the Fifth Meeting of the UAS/RPAS Focal Points.

2.2 It was established that some aspects that could be relevant to take into account in the future in the technical requirements and in the operational, legal and administrative considerations for the definitions of the specific and certified categories, may be implemented in the future within the CONOPS UA. Therefore, the possibility of incorporating future experiences in the development of these categories remains open and, in this way, the CONOPS UA could be complemented for the States of the SAM Region and the SRVSOP.

3. Conclusion

3.1 In **Appendix A** of this working paper, the final proposal of the UA CONOPS is presented for acceptance by the Sixth Virtual Meeting of the UAS/RPAS Focal Points of the SAM and SRVSOP States, once the proposal has been analysed and comments received.

4. Suggested action

4.1 The Sixth Virtual Meeting of the UAS/RPAS Focal Points of the SAM and SRVSOP States is invited to:

a) Take knowledge of this WP and its Appendix A; and

b) comment and accept the CONOPS UA proposal being presented as Appendix A to this working paper.

APPENDIX A

INTERNATIONAL CIVIL AVIATION ORGANIZATION

SOUTH AMERICAN (SAM) REGION

UNMANNED AIRCRAFT (UA) CONCEPT OF OPERATIONS (CONOPS)

Version: Original
March 2022

1. Foreword

Unmanned aircraft (UA) need to be integrated into the existing aviation system in a safe and proportionate manner and this integration must foster an innovative and competitive UA industry in South America, creating jobs and growth. The proposed regulatory framework should set a level of safety and of environmental protection acceptable to the society and offer sufficient flexibility for the new industry to evolve, innovate and mature. Therefore, the exercise is not simply transposing the system put in place for manned aviation but creating one that is proportionate, progressive, risk-based, and the requirements must express objectives that will be complemented by industry standards.

Considering the broad range of operations and types of UA, the SAM Region has established the following categories of operations and their associated regulatory regime: **open, specific and certified**.

The ***open*** operation category for small UA (drones) should not require an authorisation by a civil aviation authority (CAA) for the flight, as long as they stay within defined boundaries for the operation.

The ***specific*** operation category requires a risk assessment that will lead to an operations authorisation with specific limitations adapted to the operation.

The ***certified*** operation category comprises operations with a higher associated risk that will require integration in non-segregated airspace.

Protection of other public interests such as the privacy and security entailed by UA operations will need to be addressed at the same time as the safety risk and will be dealt with at both national and regional level. The regulatory framework may envisage provisions to reduce such risks. The developing regulations need to be complemented by safety promotion actions to support SAM States.

The continued development of UA and their integration in non-segregated airspace pose new challenges and a significant amount of additional research needs to be performed. The traffic management UA (UTM) and remotely piloted aircraft systems (RPAS) concept of operations (CONOPS) will need to be further developed. Also, the harmonisation of regulations and availability of a frequency spectrum, essential for successful UA operations, will need to be envisaged. Finally, the development of the UA market and the development of the technologies need to be carefully monitored and the planning adapted to the evolution of these aircraft.

2. Background

Unmanned aircraft systems (UAS) are a new component of the aeronautical system, which ICAO, the SAM States and the aerospace industry seek to understand, define and ultimately integrate. These systems are based on state-of-the-art aerospace technological developments, which offer breakthroughs that may give rise to new and improved commercial or civil applications, as well as safety and efficiency enhancements for all civil aviation. The safe integration of UAS in non-segregated airspace will be a long-term activity, with many stakeholders contributing their experience and expertise on topics as diverse as licensing and medical qualification of remote pilots, detect and avoid system technologies, frequency spectra (including their protection from unintentional or unlawful interference), requirements regarding separation from other aircraft, and development of a robust and effective regulatory framework.

Unmanned aircraft systems (UAS) are aircraft and their associated components that are operated with no pilot on board.

RPAS are a set of configurable elements consisting of a remotely-piloted aircraft (RPA), its associated remotely-piloted pilot stations (RPS), the required command and control (C2) links and any other system elements as may be required at any point during flight operations. RPA are a subset of UA.

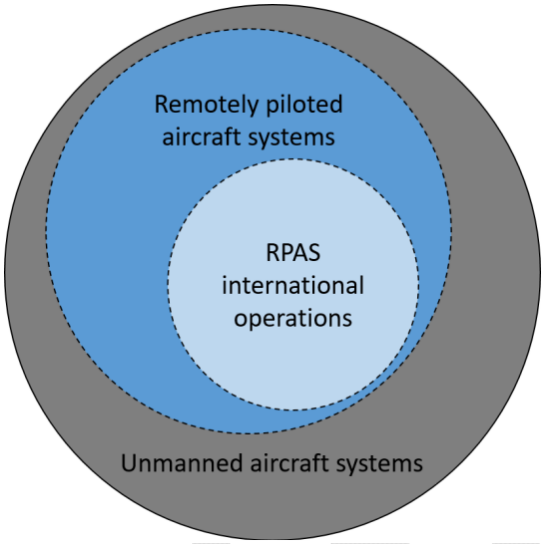
A UA operator is a person, organisation or enterprise engaged in, or offering to engage in, an operation of these aircraft. This definition assumes that UA will be remotely piloted and with no people on board.

UA are not a new phenomenon as they date back to the mid-1800s, but their development in the civil market is relatively recent. 2013 can be considered the year of UA.

The use of UA is developing at a quick pace worldwide. At present, the utilization of the UAs is extremely varied. Some examples are: precision agriculture, infrastructure inspection, wind energy monitoring, pipeline and power inspection, highway monitoring, natural resource monitoring, environmental compliance, regulatory compliance, atmospheric research, media and training, sports photography, filming, wildlife protection and research, hunting and anti-hunting monitoring and disaster relief, amongst others.

3. Classification of unmanned aircraft

The figure below shows the classification of UA and the key terms of unmanned aviation are described further below.



Unmanned aircraft (UA)

UA operate as part of an unmanned aircraft system (UAS) that also includes a remote pilot station (RPS), a command and control C2 link, and other necessary components.

Unmanned aircraft (UA) include a broad spectrum of aircraft, from unmanned free balloons and model aircraft to highly complex aircraft piloted from remote locations (RPA) by licensed aviation professionals.

Remotely piloted aircraft (RPA)

RPAs are a subset of UAs. An additional subset of RPAS is expected to have the capability for international operations in accordance with instrument flight rules (IFR) in the near future.

It is important to note that, although this document uses the term RPA to designate only certified UAs operating in integrated airspace, the definition of RPA, as presented in the previous section, is much broader, so some States may choose to use the term RPA, too, to identify other UAs that fall into the open and specific categories.

4. Concept of operations

The operation of UA should be regulated in a manner commensurate with the risk of the specific operation. Considering the broad range of operations and types of UA, three categories of operations--open, specific and certified--and their associated regulatory regimes have been established for the South American Region (SAM) through the Latin American Aeronautical Regulations (LARs), developed and published by the Latin American Regional Safety Oversight Cooperation System (SRVSOP).

UA flying in the **open** operation category should not require authorisation by a CAA. However, the UA should stay within the limitations defined for the operation (e.g., distance from aerodromes, from people, etc.). The **specific** operation category will require an operations authorisation by a CAA, with specific limitations adapted to the operation. For the **certified** operation category, an authorisation will be required for operations with a higher risk associated with the type of operation. This category is being developed by ICAO and will cover international IFR operations conducted with RPAS and other types of operations outside the scope of IFR operations.

This concept of operations (CONOPS) has been developed to address two main goals:

a) integration and acceptance of UA into the existing aviation system in a safe and progressive manner; and

b) foster an innovative and competitive South American UA industry, creating new jobs for all the SAM States.

To achieve both goals simultaneously, the regulatory regime in SAM States needs to set a level of safety and of environmental protection that is acceptable to the society as well as provide protection of other public interests, such as privacy and security on the one hand, and offer enough flexibility for the new industry to evolve, innovate and mature on the other hand.

The regulatory framework should not simply transpose the system put in place for manned aviation but must be proportionate, progressive, and risk-based, and the requirements must express objectives that will be complemented by industry standards. Only this way can we address the challenges posed by the wide variety of UA and their operation, allowing us to learn and progress from simple operations to more advanced and higher risk operations as we gain experience with such operations.

The regulatory framework must be an enabler and not an impediment. Hence, the right balance must be struck between innovation and the societal concerns about safety, environmental protection, privacy and security.

This approach puts commercial and non-commercial operations (including classical aero models or UA used for recreational purposes) on equal footing. This concept focuses on safety risks but recognises the importance of privacy and security risks to people and property. These subjects are briefly addressed at the end of this CONOPS.

The following main risks shall be taken into account in the formulation of certification and operating regulations:

- mid-air collision with manned and unmanned aircraft;
- harm to people;
- use of these aircraft for committing criminal acts; and
- damage to property, in particular critical and sensitive infrastructure.

4.1 Open category

The open category covers those operations with small UA (drones) weighing less than 25 kg that are considered to be low risk. Operations in the open category do not require an operational authorisation by the civil aviation authority (CAA) or a declaration by the UAS operator before starting the operation, unless otherwise required for specific operations by the national regulations of SAM States.

In this category, there are no direct requirements on remote pilot competencies and qualifications unless the UA is operated within 4 km of an aerodrome. For a UA operated within 4 km from an aerodrome, the remote pilot must be acquainted with the aeronautical charts and the airspace.

There are no airworthiness requirements for UA operating in this category unless the UA weighs more than 15 kg. UA weighing more than 15 kg but less than 25 kg require inspection and approval by an approved aviation organisation (AAO); or manufacturers may submit a statement of compliance for a make/model of UA, that specifies the demonstrated capabilities of the UA. This statement of compliance will be acceptable to the CAA.

By establishing a division between UA over 15 kg and those under 25 kg, CAAs will have additional flexibility to identify the UA that warrant additional scrutiny, without requiring additional remote pilot qualifications.

In the open category, the following technical requirements will apply with respect to UA and their operation:

- have a maximum certificated take-off weight (MTOW) of less than 25 kg;
- be limited to a maximum height from the take-off point of 400 ft (122 m);
- limited to operations within visual line-of-sight (VLOS);
- all operations must be supervised by a remote pilot who has the ability to intervene in flight control;
- autonomous flights are not allowed;
- the carriage of dangerous goods will not be allowed, unless expressly authorised by the State in accordance with its national regulations;
- the dropping of items from unmanned aircraft (UA) shall not be allowed, unless specifically authorised by the State for occasions that shall be regulated;
- the State will include on unmanned aircraft, the registration number of the operator and/or of the UA;
- the State may authorise anti-drone systems for civilians; and
- the State will consider UA operations in airspace under UA traffic management (UTM).

In addition to the technical requirements, the SAM Region established the following operational and administrative considerations:

- for authorising flight operations, no prior risk assessment will be required, as they are considered to be low risk;
- when authorising operations, it is recommended that a distinction be made between commercial and non-commercial operations;
- safety may be ensured through operational limitations, compliance with industrial safety standards, and by applying operational standards;
- it is advisable that UA be controlled by the police in compliance with any legislation or regulations that may be enacted, and that each State do so in accordance with its own legislation and regulations;

- open category operations will be defined only for flights within visual range (VLOS);
- the take-off weight for this category will be defined as less than 25 kg. However, each State may determine the fraction of kilogrammes and its specificities in its national regulations;
- the maximum height for operations in this category will be 400 ft (122 m);
- the State may establish, according to its needs, drone-free zones, which shall be published in the aeronautical information publication (AIP) of each State;
- the requirement for software to restrict access to areas defined by the State will be subject to the operational decisions of each State regarding this open category;
- the definition of subcategories will be subject to the needs of each State as it deems appropriate, and shall be set out in its regulations;
- each State shall establish an operator and/or UAS registry, which must preferably be based on a web service;
- in the open category, flights not supervised by a person will not be allowed, since the remote pilot should always have the aircraft in sight under VLOS conditions;
- the holding of licences, ratings or certificates for a remote pilot to perform in this category in command of an aircraft will be defined in the regulations of each State;
- the responsibility of the remote pilot-in-command, who will be the sole and ultimate authority while operating the aircraft under all circumstances, shall be established in the regulations of each State;
- each State may establish requirements for safety devices when UAS operations in the open category are conducted over people, populated areas or protected flora or fauna sites;
- most States considered not having a specific regulation for sporting operations; and
- States may incorporate sporting UA operations into the open category.

4.2 Specific category

The specific category covers all operations with UA weighing 25 kg or more or UA weighing less than 25 kg but which do not meet the requirements of the open category.

The specific category must cover operations that do not meet the characteristics of the open category, where risk needs to be mitigated by additional operational limitations or higher technical capability of the UA and/or equipment and personnel involved.

This category is designed for operations involving higher risk. It is flexible in the sense that very few activities are prohibited. Instead, a UAS authorisation or UAS operator certificate (UOC) will be granted on a case-by-case basis, once the CAA is satisfied that the operator has identified the hazards and their consequences associated with the operations and has a plan to mitigate the identified risks, in the scenario in which the operation is to be carried out

The safety risk assessment has to address airworthiness, operational procedures and environment, competence of involved personnel and organisations, as well as airspace issues. These assessments can be based on guidance for an authorisation for low-level operations or equivalent processes acceptable to the CAA, either as industry standards, advisory circulars (AC), or acceptable means of compliance (AMC).

The minimum level of safety for airworthiness will be based on the results of the assessment of identified safety risks. It may be defined and demonstrated through compliance to acceptable industry standards. Also, it may be acceptable to compensate certain airworthiness risk factors by operational risk mitigating factors, such as limitations on the operations, special qualifications for the personnel, etc. Conversely, in some cases the outcome of the assessment may require a certification of the UA or of specific functions [for example, safety devices, communication, navigation and surveillance capability to conduct operations beyond visual line-of-sight (BVLOS)], by the competent authority. Therefore, the approval certifications related to the equipment suppliers at their request could simplify the requirements in the evaluation of safety risks of the operators and, in this way, allow the operator to expand the scope of its operations.

The airworthiness assessment is closely related to the operational environment and procedures; *e.g.* the operation close to crowds could be acceptable when the UA has some additional functionality (*e.g.* automatic loss of link procedures, impact energy, such as parachutes; reliability and performance navigation systems suitable for BVLOS operations, etc.) and that the operating procedures are adequate and have the endorsement of the CAA, when the renewal of their permits corresponds.

The required competence of the staff involved will also be established on the basis of the safety risk assessment. It could range from specific training up to a licence issued by the CAA, to carry out an aerial activity of this type. Standards can be developed for the assessment of pilots and staff based on which such staff may demonstrate a basic competence.

An operations manual (OM) could be required to define the operating procedures, the required airworthiness level, as well as the required competence of staff involved and type of airspace, taking into account the results of the safety risk assessment.

As soon as an operation starts posing more significant aviation risks to persons overflown or involves sharing the airspace, the operation must be placed in the specific category. For these activities, the risks will be analysed based on an operational risk assessment (SMS) and the mitigation will be agreed upon by the CAAs, according to the results, before a new operation. This process will be materialised with the issuance of an authorization.

4.3 Certified category

The certified category will include RPAS certified to operate in high-risk operating conditions or internationally within IFR controlled airspace, in non-segregated airspace and at aerodromes.

By 2030, a large number of RPA will share the airspace with manned aviation, some of which will fly under IFR. While some RPAS operations will take place under IFR for part of their flight, others will operate only under visual flight rules (VFR). Furthermore, RPA will operate on domestic and international routes, as well as in controlled and uncontrolled airspace. These RPA will take off from less congested areas and land at similar destination aerodromes while others will use congested areas and aerodromes.

Other RPA will only operate at low altitudes where manned aviation activities are few or minimal. For example, for border protection, environmental applications, service inspection or forest fire-fighting activities, these RPA could fly in international airspace, depending on whether there are letters of agreement between the States.

All RPA are expected to comply with applicable procedures and airspace requirements defined by the State, including emergency and contingency procedures, to be established and coordinated with the respective air navigation service providers (ANSPs).

The operation of RPA in this category will be quite comparable to what is done for piloted aircraft. It may be expected that the competent authorities would be the same as for manned aircraft. These competent authorities could rely, as of today, on qualified entities to perform technical tasks.

A type certificate also covering environmental certification, an individual certificate of airworthiness, and an individual noise certificate will be issued for each RPA. Demonstration of capability for the designer and the manufacturer will take the form of design and production organisation approvals, respectively. Combined approvals could be envisaged if the necessary requirements for these approvals are formulated. Certification requirements will be adopted to cover different configurations: fixed wing, rotorcraft, airship, and powered lift. Requirements for the command and control station (C2) will be included.

Maintenance above a predetermined threshold will be performed in approved aviation organisations (AAO) and the maintenance personnel approving release to service will be licensed or authorised.

Pilots will be licensed and the operator will receive an approval by the organisation (CAA), according to the regulations of each State.

Integration in non-restricted airspace would be subject to a safety assessment by the air traffic service (ATS) provider.

5. Safety promotion actions

The development of regulations and guidance material will be complemented by safety promotion actions that the SAM Office and the SRVSOP may undertake to support their member States. Three proposals could be made all for the open category:

- Develop a brochure listing the do's and don’ts for small UA (drone) operators in the open category. This brochure could be published on the SAM Office, SRVSOP and member States' websites and be distributed with the support of the UA/RPAS community. This brochure will be translated into Spanish and Portuguese with the support of the UA/ RPAS community.
- Public video campaigns may also be organised.
- As the police and other law enforcement agencies in charge of citizen control are expected to play a key role in the oversight of the open category, it is important that consideration be given to providing these organisms with an information manual and a training syllabus, as considered by each State. It will also be necessary to translate these manuals into Spanish and Portuguese with the cooperation of member States.

In order to perform safety promotion actions, help and advice could be sought from the federations, clubs and associations that develop model UAS/RPAS throughout South America.

6. Data protection, privacy, security and spectrum

This concept document has focused on safety aspects, which is a top priority for aviation. However, the risks involved in UA operations will need to be addressed at the same time as the safety risks.

The privacy/data protection risk will be dealt with at national level. The regulatory framework may envisage provisions that could reduce that risk and also the security risk. For example, the privacy (data protection) risk could be mitigated through the operators' self-registration in a web-based application maintained by the local authorities. Another solution would be to install remote identification devices, such as chips/sim cards in UA. Such a web-based application or chip/sim cards could also contribute to mitigate the security risk.

It should be noted that operators may use the same process for managing safety, privacy and security risks by taking an integrated approach.

To be able to support the regulations for the open category and to give information to the operators on applicable local regulations and restrictions, a standardised web portal could be established. This portal could inform about local regulations and temporary restrictions, *e.g.* due to security concerns.

The registration of operations could solve some privacy, security and enforcement issues. For example, a requirement in certain areas could be to have a printed copy of the registration with the applicable conditions.

The availability of spectrum is fundamental to the success of UA. Spectrum decisions are taken in the International Telecommunication Union (ITU). It is recommended that member States have an active coordination through this organism for the assignment of radio frequency spectrum to UA operations.

7. Outlook

The integration of UA in non-segregated airspace will pose new challenges. While today flying a single UA in non-segregated airspace with cooperative aircraft can be done with appropriate coordination and special procedures, operation of several of them, possibly with non-cooperative aircraft, will be much more complicated and will require additional measures. This CONOPS will need to evolve and be further developed to address the issues related to operations of UA fleets in non-segregated airspace.

UA fleet operations will pose new, unexplored challenges when conducted alongside manned aircraft operations. This integration will need to be done in full coordination with ICAO aviation system block upgrades (ASBU).

The key research areas for the integration in non-segregated airspace are as follows:

- detect and avoid;
- airspace and aerodrome access;
- command and control (C2) communications;
- human factors;
- contingency;
- security; and
- autonomy.

This will need a significant amount of additional research to be performed, in particular by the SAM Region and SRVSOP. Cooperation will be necessary to increase synergies and avoid duplication of work.

Factors to be taken into account could be the following (not exclusive list):

- transfer of UA from one control station to another: some UA have a significant range and the transfer from one control station to another will be envisaged. Experience has already shown that such transfer must not coincide with the transfer from one ATC sector to another;
- operational control of several UA from one control station: this is a real possibility and will lead to formation flights, with coordinated flights of the various UA, for example for efficient fire-fighting or for crop spraying;
- ATC and operational control performed by the same person: this is an extension of the previous case, but will entail new risks and raise new liability issues;
- communications with ATC with an acceptable latency period;
- full autonomy and cooperative operations (for example, operation in swarms, network-centric operations); and
- extreme flight range (several days even months) at very high altitude (20,000 m): how to maintain the necessary surveillance to face emergencies.

Integration in non-segregated airspace will require the following for air navigation services and operators:

- minimum navigation, communication and surveillance performance standards;
- adaptation of the infrastructure;
- new procedures; and
- adaptable training.

The UTM CONOPS will need to be further developed, addressing short-, medium-, and long-term perspectives. However, these perspectives must be based on the development of the UA market and of the technologies. These should be carefully monitored and the planning adapted accordingly.

8. Planning

Planning will reflect a progressive introduction in non-segregated airspace. The development of rules will be market-driven, so the following short-, medium-, and long-term actions are identified in this CONOPS:

Short term: Until December 2023

- development and approval of the UA CONOPS;
- development and approval of the UTM CONOPS;
- development and approval of UAS LARs 100, 101, 102 and 149 and the related guidance material;
- development of competencies, job profiles and functions and responsibilities (roles) of the personnel in charge of UA certification and inspection;
- development of training programmes and training plans for inspectorate staff;
- implementation of training plans for inspectorate staff; and
- start of operations in the open and specific categories.

Medium term: From 2024 to December 2026

- development and approval of the RPAS CONOPS;
- development and approval of the RPAS/ATM CONOPS;
- initiation of the development and approval of RPAS LARs and the related guidance material;
- development of competencies, job profiles and functions and responsibilities (roles) of the personnel in charge of RPAS certification and inspection;
- development of training programmes and training plans for inspectorate staff;
- implementation of training plans for inspectorate staff;
- development of model programmes for training centres (in order to achieve regional standards)
- development of maintenance programmes for UAS/RPAS equipment
- start of operations in the certified category;
- continued implementation of operations in the open and specific categories; and
- surveillance of operations in the open and specific categories;

Long term: From 2026 to December 2030

- implementation of the RPAS CONOPS;
- implementation of the RPAS/ATM CONOPS;
- completion of the development and approval of the RPAS LARs and the related guidance material;
- continued implementation of training plans for inspectorate staff;
- implementation of operations in the certified category; and
- surveillance of operations in the certified category; and
- implementation of RPAS requirements, adjusted to industry requirements.

- END -