



**INTERNATIONAL CIVIL AVIATION ORGANIZATION  
South American Regional Office**

**SRVSOP/SAM Experts Workshop/Meeting: Roadmap for the  
Implementation of UAS in the Specific Category**

**FINAL REPORT**

**(Lima, Peru, 11 to 15 May 2026)**

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## HISTORY OF THE MEETING

### ii-1 PLACE AND DURATION OF THE MEETING

The SRVSOP/SAM Experts Workshop/Meeting: Roadmap for the Implementation of UAS in the Specific Category, was held in Lima, Peru, from 11 to 15 May 2026 and included additional remote participation.

### ii-2 OPENING CEREMONY

The meeting was opened by Ms. Veronica Chávez, Regional Officer for Safety Management, who highlighted the request from the SRVSOP States and the region to initiate arrangements for the development of harmonized regulations for unmanned aircraft in the specific category. During the opening, the need to incorporate operational experience and the industry's real-world challenges was emphasized to develop a regulatory framework that is at once enabling, sustainable, and supportive of operational safety. It was also noted that this effort, aligned with the SRVSOP Strategic Plan 2024–2027 and the SAM Regional Strategy 2035, seeks to consolidate a common vision that will actively contribute to ICAO's global initiatives and ensure the progressive and safe integration of this technology into the regional aeronautical system.

### ii-3 ORGANIZATION, OFFICERS AND SECRETARIT

Ms. Veronica Chávez, Regional Officer for Safety Management of the ICAO South American Office, acted as Secretary of the Meeting, with the support of Leonardo Haberfeld and the following officials from the Regional Safety Oversight Cooperation System (SRVSOP).

Jorge Barrios	Airworthiness Expert
Valeria Ramos	Operations Expert
Jose Peña	Airworthiness Expert
Francisco Santiago	Operations Expert
Beatriz Larrañaga	Aerodromes and Ground Aids Expert
Andres Ruiz	Air Navigation Services Expert

The Meeting expressed its appreciation for the collaboration of EASA, IDEISGROUP, UNODC, WPF, WMO, WING, and ZIPLINE regarding their activities in the field of safety oversight support systems and for the exhibition of their products to the participants of the event.

### ii-4 WORKING LANGUAGES

The working and documentation languages of the Meeting were Spanish and English during the first three days, and Spanish during the last two days.

### ii-5 ATTENDANCE

Nine (9) States of the SAM Region, as well as seven (7) International Organizations, attended the Meeting, making a total of 45 participants. The list of participants appears in the attachment to this report.

**ii-6 LIST OF PARTICIPANTS**

The list of participants is presented in page iii-1 of this report.

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**LIST OF PARTICIPANTS****BOLIVIA**

Elder Antonio Ninahuanca Terán  
Inspector de Aeronavegabilidad  
[eninhuanca@dgac.gob.bo](mailto:eninhuanca@dgac.gob.bo)

Sergio William Ordoñez Ramallo  
Inspector de Operaciones  
[sordonez@dgac.gob.bo](mailto:sordonez@dgac.gob.bo)

Fernando Juan Poveda Montalvo  
Técnico Licencias al Personal Aeronáutico  
[fpoveda@dgac.gob.bo](mailto:fpoveda@dgac.gob.bo)

**BRASIL**

Kleber Daniel Jesuíno (orador)  
Coordinator Airworthiness Rulemaking Coordination Group (CNORMA)  
Airworthiness Standards and Innovation Technical Branch (GTNI) Department of Airworthiness (SAR)  
[kleber.Jesuino@anac.gov.br](mailto:kleber.Jesuino@anac.gov.br)

Rui Carlos Josino Alexandre (orador)  
Coordenador de Drones e Nuevas Tecnologías  
[rui.carlos@anac.gov.br](mailto:rui.carlos@anac.gov.br)

Antonio Jose e Silva (virtual)  
President of the Aeronautical Law Council of the Brazilian Bar Association  
[tonjadv@gmail.com](mailto:tonjadv@gmail.com)

**COLOMBIA**

Mario Fernando Rodríguez Montoya (orador)  
Coordinador Grupo Drones y Movilidad Urbana Aérea  
[mariof.rodriguez@aerocivil.gov.co](mailto:mariof.rodriguez@aerocivil.gov.co)

Jorge Eliecer Velasco Vargas  
Inspector de Seguridad Operacional III  
[jorge.velasco@aerocivil.gov.co](mailto:jorge.velasco@aerocivil.gov.co)

**ECUADOR**

Darwin Suarez León  
Inspector de Navegación Aérea  
[darwin.suarez@aviacioncivil.gob.ec](mailto:darwin.suarez@aviacioncivil.gob.ec)

Xavier Jaramillo

Especialista RPAS  
[xavier.jaramillo@aviacioncivil.gob.ec](mailto:xavier.jaramillo@aviacioncivil.gob.ec)

### **PANAMA (virtual)**

Juan Carlos Benitez  
Jefe de Drones OPS  
[juan.benitez@aeronautica.gob.pa](mailto:juan.benitez@aeronautica.gob.pa)

Aristides Meléndez  
Inspector de AIR – Aviónica  
[aristides.melendez@aeronautica.gob.pa](mailto:aristides.melendez@aeronautica.gob.pa)

### **PARAGUAY**

Rocio Soledad Araujo Cajés  
Gerente de Operaciones  
[raraujo@dinac.gov.py](mailto:raraujo@dinac.gov.py)

Jorge Gabriel Colman Caballero  
Jefe de Dpto. de Licencias, Inspector PEL, Piloto Aviador Civil  
[jgcolman@dinac.gov.py](mailto:jgcolman@dinac.gov.py)

Robin Jorge Dacak Fernández  
Jefe de Departamento Regulación de Tránsito Aéreo  
[robindakak@gmail.com](mailto:robindakak@gmail.com)

Christian Javier Valdez Arrua  
Inspector de Aeronavegabilidad/Ingeniero Aeronáutico  
[cvaldeza@dinac.gov.py](mailto:cvaldeza@dinac.gov.py)

Juan Bautista Almirón Giménez  
Gerente Aeronáutico Administrativo  
[ran@dinac.gov.py](mailto:ran@dinac.gov.py)

Tania Díaz  
Jefa de Departamento Instrucción y Fomento, Inspector PEL  
[tdiaz@dinac.gov.py](mailto:tdiaz@dinac.gov.py)

Vicente Arnaldo Balbuena Torres  
Asesor jurídico – Coordinador de Gestión Administrativo  
[vbalbuena@dinac.gov.py](mailto:vbalbuena@dinac.gov.py)

### **PERÚ**

Ailton José de Oliveira Júnior  
Consultor experto de OACI  
[ailton.Junior@anac.gov.br](mailto:ailton.Junior@anac.gov.br)

Robert Quiroga  
Consultor experto de OACI  
[robertquirogacruz@gmail.com](mailto:robertquirogacruz@gmail.com)

Juan Jose Sola (virtual)  
Experto RPAS (CDI/OACI)  
[juanjosola@gmail.com](mailto:juanjosola@gmail.com)

Jorge Vargas (virtual)  
Experto RPAS (CDI/OACI)  
[vargasjhvr@t4drones.com](mailto:vargasjhvr@t4drones.com)

Tomás Gustavo Teixeira Mourao  
Punto Focal UAS/RPAS  
[tteixeira@mtc.gob.pe](mailto:tteixeira@mtc.gob.pe)

Marco Antonio Lucero Vargas  
Especialista RPAS  
[mlucero@mtc.gob.pe](mailto:mlucero@mtc.gob.pe)

Kimberly Rojas Ruiz  
RPAS Analyst  
[krojas@mtc.gob.pe](mailto:krojas@mtc.gob.pe)

Alfonso Hernán Rivera-Santander Mieses  
Inspector de Operaciones  
[ariveram@mtc.gob.pe](mailto:ariveram@mtc.gob.pe)

Alejandro Alberto Alva Panduro  
Inspector de Aeronavegabilidad - Normas  
[aalva@mtc.gob.pe](mailto:aalva@mtc.gob.pe)

Julio Rios Vienrich  
Inspector de Operaciones  
[jriosv@mtc.gob.pe](mailto:jriosv@mtc.gob.pe)

Huber Joel Espinoza Bernal  
UAS Specialist / Operational Safety Analyst  
[espinozabernal.hj@gmail.com](mailto:espinozabernal.hj@gmail.com)

Renzo Gallegos Begazo  
Jefe Área de Seguridad Operacional - SMS  
[rgallegos@corpac.gob.pe](mailto:rgallegos@corpac.gob.pe)

### **URUGUAY (virtual)**

Gonzalo Volonté  
Jefe de Personal Aeronáutico  
[gonzalo.volonte@dinacia.gub.uy](mailto:gonzalo.volonte@dinacia.gub.uy)

Mauricio Chape  
Inspector PEL  
[mauricio.chape@dinacia.gub.uy](mailto:mauricio.chape@dinacia.gub.uy)

Pablo Guigou  
Inspector de Seguridad Operacional  
[pablo.guigou@dinacia.gub.uy](mailto:pablo.guigou@dinacia.gub.uy)

Julio Olivera  
Inspector Gubernamental de Operaciones  
[jolivera@dinacia.gub.uy](mailto:jolivera@dinacia.gub.uy)

### **VENEZUELA (virtual)**

Juan Villar González  
Gerente de Certificación de Diseño y Fabricación, Gerencia General de Seguridad Aeronáutica  
[juan.villar@inac.gob.ve](mailto:juan.villar@inac.gob.ve)

Carlos Gonzáles Ashbi  
Coordinador del Área de Trabajo UAS/GCO, Gerencia General de Seguridad Aeronáutica  
[carlos.ashbi@inac.gob.ve](mailto:carlos.ashbi@inac.gob.ve)

### **SRVSOP**

Jorge Luis Barrios Núñez  
Experto en Aeronavegabilidad  
[jbarrios@icao.int](mailto:jbarrios@icao.int)

Jose Antonio Peña Valero  
Experto en Aeronavegabilidad  
[jpena@icao.int](mailto:jpena@icao.int)

Valeria Ramos  
Experta en Operaciones  
[vramos@icao.int](mailto:vramos@icao.int)

Francisco Javier Santiago Pergolesi  
Experto en Operaciones  
[fsantiago@icao.int](mailto:fsantiago@icao.int)

Beatriz Larrañaga  
Experta en Aeródromos y Ayudas Terrestres  
[blarranaga@icao.int](mailto:blarranaga@icao.int)

Andres Alonso Ruiz Ospina  
Experto en Servicios de Navegación Aérea  
[aruiz@icao.int](mailto:aruiz@icao.int)

**OACI**

Verónica Yamila Chávez Faiad  
Oficial Regional de Gestión de la Seguridad Operacional  
[vchavez@icao.int](mailto:vchavez@icao.int)

Leonardo Haberfeld (orador)  
Technical Expert, Remotely Piloted Aircraft Systems (RPAS)  
[LHaberfeld@icao.int](mailto:LHaberfeld@icao.int)

**Organizaciones Internacionales****EASA**

Justin Chirea Drones  
Project Manager  
[justin.chirea@easa.europa.eu](mailto:justin.chirea@easa.europa.eu)

**UNODC**

Jorge Armando Caballero Espejo  
Especialista en Sensores Remotos / Remote Sensing Specialist  
[jorge.caballeroespejo@un.org](mailto:jorge.caballeroespejo@un.org)

**WMO**

Nicolás Rivaben  
Scientific Officer  
[nrivaben@wmo.int](mailto:nrivaben@wmo.int)

**WPF**

Oleg Aleksandrov  
UAS Project Manager  
[oleg.aleksandrov@wfp.org](mailto:oleg.aleksandrov@wfp.org)

**Industria****IDEISGROUP**

Najher Guerra  
Presidente de Grupo Drones SA  
[nguerra@ideisgroup.com](mailto:nguerra@ideisgroup.com)

**WING**

Praveen Raju  
Global Policy & Ecosystem  
[praveenraju@wing.com](mailto:praveenraju@wing.com)

**ZIPLINE**

Okeoma Moronu  
Global Head of Regulatory, Policy and Government Affairs  
[okeoma.moronu@flyzipline.com](mailto:okeoma.moronu@flyzipline.com)



**SUMMARY OF THE DISCUSSION**

**SAM/SRVSOP EXPERT WORKSHOP/MEETING  
ROADMAP FOR THE IMPLEMENTATION OF UAS/RPAS IN THE SPECIFIC CATEGORY**

**SAM Regional Office, Lima, Perú, 11 to 15 May 2026**

**SUMMARY**

The SAM/SRVSOP Workshop/Expert Meeting on the Roadmap for the Implementation of UAS in the Specific Category brought together States, international organizations, industry representatives, and technical experts to support the development of a harmonized, risk-based roadmap for a regional framework for UAS operations within the SAM Region. Discussions focused on operational experiences, implementation challenges, regulatory strategies, and technical coordination mechanisms necessary to support safe, scalable, and interoperable UAS integration. Presentations from ICAO, EASA, UN entities, industry stakeholders, and Member States highlighted operational lessons learned, risk assessment methodologies such as SORA, BVLOS implementation experiences, UTM integration concepts, humanitarian and meteorological applications, and emerging regulatory models. The meeting concluded with the development of a phased roadmap for the future LAR UAS framework, establishing technical priorities, training strategies, cross-panel coordination mechanisms, and continuous improvement processes intended to support global harmonization, operational scalability, and future interoperability among States.

**1. INTRODUCTION**

1.1 The SAM/SRVSOP Workshop/Expert Meeting on the Roadmap for the Implementation of UAS/RPAS in the Specific Category was convened at the ICAO SAM Regional Office, to foster regional harmonization for UAS/RPAS operations within the Specific Category framework.

1.2 The workshop aimed to collect operational experiences, identify implementation challenges, and discuss pathways developing harmonized regulatory structures among SAM/SRVSOP Member States. Participants emphasized that the initiative should not focus solely on theoretical regulatory development, but rather on capturing operational realities and practical lessons learned from States and organizations already implementing UAS frameworks.

1.3 The meeting also sought to align regional efforts with ongoing ICAO global discussions, while ensuring that regional experiences could contribute to future international developments. Discussions highlighted that although ICAO guidance for the Specific Category is still under development, proactive regional harmonization efforts are essential to facilitate future interoperability and operational approvals among States.

1.4 The workshop agenda is available in **Appendix A**. All presentations can be accessed in [SAM Meeting Docs | International Civil Aviation Organization](#)

## 2. REGIONAL USE CASES, CHALLENGES, AND OPPORTUNITIES

2.1 **SRVSOP – Roadmap Development and Working Groups** – Participants discussed the proposed phased approach for regional implementation activities. The SRVSOP Secretariat explained that the roadmap development process would occur in multiple stages:

- Initial design of the regulatory structure and roadmap;
- Development of specific technical requirements by expert panels;
- Approval of harmonized regulations;
- Training and implementation activities;
- Operational testing and validation; and
- Harmonization and adoption among Member States.

2.2 This same strategy includes the LAR development principles, which ensure compliance with ICAO standards; the use of clear language; the avoidance of literal translations from other contexts; not reinventing the wheel; and consideration of the balance between oversight and operational flexibility.

2.3 The meeting further agreed that dedicated working groups would be organized under existing technical panel structures, including:

- Airworthiness;
- Operations and Dangerous Goods;
- Aerodromes and Ground Support;
- Air Navigation Services;
- Personnel Licensing; and
- Aviation Medicine.

2.3.1 Participants noted that maintaining integration across all technical domains would be essential to ensure comprehensive and sustainable implementation.

2.4 **SRVSOP – Regional Harmonization and Strategic Objectives** – Participants stressed the importance of coordinated regional action to avoid fragmented regulatory implementation among States. It was noted that harmonized regulations, procedures, and technical language would facilitate mutual recognition, operational approvals, and industry compliance throughout the region.

2.4.1 The SRVSOP Secretariat highlighted that the implementation roadmap should include not only regulations, but also:

- Advisory circulars;
- Inspector procedures;
- Specialized training programmes;
- Technical guidance material;
- Industry communication strategies; and
- Mechanisms for future multinational agreements and mutual recognition.

2.4.2 Participants also recognized the importance of leveraging the experiences of States with more advanced UAS regulatory frameworks, including Brazil and Colombia, while supporting States at earlier stages of implementation.

2.4.3 The SRVSOP Secretariat further emphasized that the long-term objective is to establish a harmonized regional implementation of a regulatory framework, based on the ICAO provisions for a harmonized global regulatory framework, capable of supporting efficient and safe cross-border UAS/RPAS operations related to the UAS Specific Category.

2.5 **ICAO Global Context and Specific Category Development** – The discussions recognized that although there are currently no SARPs dedicated exclusively to the Specific Category, ICAO already provides guidance materials that may serve as references for the regulatory development of this type of operation, notably Part 102, focused on medium-risk operations and the Specific Category, as well as the UTM Framework, 4<sup>th</sup> Edition, aimed at the safe integration and management of UAS traffic within the airspace.

2.5.1 The workshop highlighted that regional initiatives can serve as valuable operational laboratories capable of generating practical insights and recommendations for global discussions. Participants emphasized the need for continuous coordination between SRVSOP activities and ICAO Headquarters developments to ensure compatibility and interoperability.

2.6 **ICAO Global Harmonized Framework for UAS Operations** – The ICAO presentation provided an overview of the global harmonized regulatory framework being developed for UAS/RPAS operations, emphasizing ICAO's role as the United Nations specialized agency responsible for the development of Standards and Recommended Practices (SARPs) aimed at ensuring the safety, efficiency, and harmonization of international civil aviation.

2.6.1 The presentation highlighted the evolution of ICAO's work on unmanned aviation through the UASSG, RPASP, and UAS-AG structures, as well as the ongoing development of RPAS related SARPs, UTM frameworks, and implementation support materials. ICAO also emphasized the relevance of Article 8 of the Chicago Convention as the foundational provision governing pilotless aircraft operations and highlighted the importance of balancing technological innovation, operational needs, safety assurance, public trust, and market development.

2.6.2 The presentation discussed ICAO's operation-centric and risk-based regulatory philosophy, including the distinction between Open, Specific, and Certified operational categories. ICAO highlighted the challenges associated with the rapid pace of technological innovation, fit-for-purpose regulation, regulatory enforcement, and transboundary operations, emphasizing the importance of agile governance, international harmonization, stakeholder coordination, and evidence-based policymaking. The presentation also introduced ongoing ICAO initiatives related to UTM implementation frameworks, humanitarian UAS guidance, advanced

air mobility studies, and implementation support resources aimed at assisting States in developing safe and interoperable unmanned aviation regulatory framework.

**2.7 EASA Presentation – European Specific Category Framework** – EASA provided a comprehensive overview of the European regulatory framework applicable to UAS operations, focusing particularly on the Specific Category. The presentation described the three operational categories established under the European framework: Open Category, Specific Category, and Certified Category.

**2.7.1** The Specific Category was presented as a risk-based operational framework requiring operational authorization from the National Aviation Authority (NAA), supported by operational risk assessments and defined technical requirements.

**2.7.2** EASA detailed the implementation of: SORA (Specific Operations Risk Assessment); Standard Scenarios (STS); Pre-Defined Risk Assessments (PDRA); and Light UAS Operator Certificates (LUC).

**2.7.3** The presentation emphasized that the SORA methodology evaluates both ground and air risks while incorporating mitigation measures, containment volumes, and operational procedures to determine acceptable risk levels.

**2.7.4** EASA also described ongoing rulemaking simplification activities intended to reduce administrative burdens for operators and authorities, including the expansion of standard scenarios and broader use of predefined risk assessments.

**2.7.5** The European experience showed that the Specific Category requires a combination of risk assessment methodologies and simplified authorization mechanisms. In particular, standard scenarios and predefined risk assessments are useful tools to reduce the administrative burden on both authorities and operators, provided that operational conditions, mitigations, and scenario limits are clearly defined. This experience is relevant for SRVSOP, insofar as the future regional framework could incorporate harmonized scenarios for recurring operations, while maintaining the possibility of case-by-case assessment for operations that do not fit within those scenarios.

**2.8 World Food Programme (WFP) Humanitarian UAS Operations** – WFP presentation focused on the operational realities and safety considerations associated with humanitarian UAS operations in crisis and disaster environments. The discussion emphasized that humanitarian UAS operations should not be defined solely by the aircraft or operator type, but rather by adherence to established UN humanitarian principles, including humanity, neutrality, impartiality, and independence.

**2.8.1** The presentation highlighted the need to balance operational urgency and humanitarian outcomes with aviation safety requirements, particularly in complex operational environments where communications infrastructure, meteorological information, and regulatory oversight may be limited. WFP underscored that all UAS operations remain aviation activities subject to appropriate safety considerations, regardless of humanitarian intent.

**2.8.2** Presentation highlighted challenges associated with: Civil versus State aircraft distinctions; Risks acceptance methodologies; Operational reliability assessments; Remote pilot training and oversight; Weather monitoring limitations in disaster areas; and Communication and navigation infrastructure constraints.

2.8.3 The presentation also highlighted WFP's role in humanitarian aviation coordination through the United Nations Humanitarian Air Service (UNHAS) and the increasing use of UAS for humanitarian cargo delivery and support operations.

**2.9 World Meteorological Organization (WMO) Meteorological Applications of UAS** – The WMO presentation addressed the growing use of weather-sensing UAS (wx-UAS) in support of meteorological observations and atmospheric profiling activities for National Meteorological and Hydrological Services (NMHS). The presentation highlighted the operational advantages of wx-UAS, including reusable platforms, rapid lower-atmosphere sampling capabilities, and improved support for short-term weather forecasting and mesoscale meteorological prediction.

2.9.1 WMO presented the results of the 2024 WMO UAS Demonstration Campaign, which involved 44 operators across 31 cities across 12 countries and collected more than 12,000 atmospheric profiles globally. The initiative aimed to accelerate operational readiness for integration of UAS-derived meteorological observations into the WMO Integrated Global Observing System (WIGOS).

2.9.2 The presentation also discussed operational and regulatory challenges associated with wx-UAS integration, particularly regarding BVLOS operations, access to higher-altitude airspace, coordination with ANSPs, and the establishment of suitable airspace management procedures for routine meteorological operations. WMO highlighted examples from Peru, where meteorological UAS operations have been conducted in segregated or coordinated airspace environments, while noting that current regulatory limitations remain a constraint for regular atmospheric observation missions.

2.9.3 Participants discussed potential approaches enabling safe integration of wx-UAS operations, including the possible use of temporary NOTAMs, dedicated restricted airspace structures, LAANC-like authorization mechanisms, and technologies such as ADS-L, Remote ID, and ADS-B Out to support airspace integration and UTM concepts. The presentation concluded with several questions for consideration by States, CAAs, and ANSPs concerning harmonized BVLOS approval processes, airspace access frameworks, and operational authorization models for meteorological and research-related UAS activities.

**2.10 United Nations Office on Drugs and Crime (UNODC) UAS Support for Monitoring and Surveillance of Illicit Activities** – The UNODC presentation addressed the use of RPAS technologies to support monitoring and surveillance activities related to illicit crops and illegal activities in remote Amazonian and Andean regions. The presentation highlighted operational challenges associated with territorial monitoring in these environments, including difficult access, adverse climatic conditions, rapid land-use changes, and the presence of illegal economies operating in isolated areas. UNODC also noted the limitations of traditional monitoring methods, such as high logistical costs and operational risks associated with fieldwork, as well as cloud coverage and resolution limitations affecting satellite imagery validation activities.

2.10.1 The presentation emphasized that RPAS technologies provide an effective complementary capability through high-resolution imagery acquisition, operational flexibility, reduced costs, access to difficult-to-reach areas, and improved multitemporal monitoring and territorial verification capabilities. UNODC described a monitoring methodology involving mission planning, image acquisition, geospatial processing, and analytical reporting, while also discussing operational considerations such as flight altitude, weather conditions, autonomy limitations, and operational safety. The integration of satellite monitoring and RPAS operations was highlighted to improve regional detection, early warning functions, and detailed local verification activities.

2.10.2 The presentation also addressed the growing use of artificial intelligence and machine learning tools to support automated identification, classification, segmentation, and multitemporal analysis of monitored areas. Participants discussed operational and regulatory challenges affecting RPAS deployment, including tropical weather conditions, field security concerns, transportation logistics, airspace authorization requirements, and the need for advanced analytical processing capabilities. The presentation concluded that RPAS technologies represent a strategic tool for environmental and territorial monitoring and that future developments involving autonomous systems, cloud-based GIS platforms, edge computing, and real-time AI integration will further enhance monitoring and surveillance capabilities.

2.10.3 Participants underscore the need to enhance inter-agency coordination mechanisms to streamline approvals, clarify roles and responsibilities, and improve response to security and safety events involving UAS. Capacity-building initiatives, including inspector training, development of approved training organizations, and targeted awareness campaigns for operators and the public, were identified as essential enablers for compliance and sustainable growth. From an operational perspective, the gradual deployment of UTM capabilities, the use of innovation sandboxes, and the establishment of designated corridors or operational zones were seen as pragmatic measures to support incremental expansion of more complex operations, including BVLOS and emerging AAM concepts.

**2.11 ICAO Model UAS Regulations (Parts 101, 102 and 149)** – ICAO presentation provided an overview of the ICAO Model UAS Regulations, including Parts 101, 102, and 149, developed as non-prescriptive guidance material intended to support States in establishing national UAS regulatory frameworks adapted to their respective legal and operational environments. ICAO explained that the Model Regulations were developed under the UAS Advisory Group (UAS-AG) following mandates from ICAO assemblies and conferences related to unmanned aviation integration, safety risk management, and UTM development. The presentation highlighted that the Model Regulations are intended to provide flexible guidance, while allowing States to adapt requirements according to their operational needs and regulatory structures.

2.11.1 The presentation explained that Part 101 focuses on low-risk “Open” operations, while Part 102 addresses moderate-risk “Specific” operations, including remote pilot certification, operational risk assessments, and UAS Operator Certificates (UOC). Part 149 addresses Approved Aviation Organizations (AAO), certification requirements, and Safety Management System (SMS) implementation. ICAO also presented supporting guidance material and advisory circulars related to dangerous goods transport, humanitarian operations, RPAS CONOPS, and UTM implementation, emphasizing the importance of harmonized, risk-based, and scalable regulatory approaches to support safe UAS integration into national airspace systems.

**2.12 Current Brazilian Regulatory Framework and Lessons Learned** – The representatives from Brazil presented an overview of the country’s current UAS/RPAS regulatory framework and the lessons learned since the implementation of RBAC-E No. 94 in 2017. The presentation explained the institutional coordination among ANAC, DECEA, and ANATEL in supporting safe UAS operations in Brazil, while also highlighting the significant growth of the national unmanned aviation sector, including the expansion of BVLOS operations, delivery services, agricultural applications, and commercial drone activities. Brazil emphasized that operational experience demonstrated limitations in the existing weight-based regulatory approach, particularly regarding the proportionality between operational risk and regulatory burden.

2.12.1 Brazil presented quantitative data illustrating the scale of UAS/RPAS ecosystem growth in the country, including approximately 20% annual growth, nearly 60,000 recreational drones, 100,000 professional drones, 31 authorized models, and more than 400,000 approved flights by 2025. These figures highlighted the need for scalable regulatory processes, efficient authorization tools, and criteria proportional to operational risk.

2.12.2 Further presented its proposal for a new regulatory framework based on a more flexible and operationally focused risk-based methodology. The proposed regulation introduces Open, Specific, and Certified categories aligned with international trends, while placing greater emphasis on operational risk assessments, operator capability, and operational mitigations rather than solely on aircraft weight or product approvals. The Brazilian delegation explained that methodologies such as SORA, standard scenarios, and operator-based authorizations are being considered as mechanisms to improve scalability, reduce unnecessary bureaucracy, and better align regulatory oversight with the actual risks of the operation.

2.12.3 The Brazilian experience also highlighted the importance of distinguishing between design authorization and certification, avoiding automatic transfer of manned aviation certification processes into the UAS domain when not proportionate to risk. It also emphasized reviewing system capabilities, especially for operations above 400 feet or those requiring additional navigation capabilities, while maintaining simple processes for low-risk operations.

2.12.4 The presentation also highlighted Brazil's participation in international coordination initiatives and technical working groups, including JARUS, ASTM, and Drone Squad activities, as part of ongoing efforts to support international harmonization interoperability. Discussions included the importance of accepting foreign operational data where appropriate, reducing repetitive approval processes, and creating more efficient authorization mechanisms for low-risk operations. Brazil emphasized that the proposed framework seeks to maintain appropriate safety levels while fostering innovation, flexibility, and sustainable growth of the unmanned aviation ecosystem.

2.13 **Peru – Development of a National UAS Regulatory Framework** – The representatives from Peru presented an overview of the country's ongoing efforts to modernize and strengthen its national UAS/RPAS regulatory framework with ICAO's support. The presentation described current activities related to the development of a new regulatory proposal, including the establishment of an implementation roadmap structure in multiple phases.

2.13.1 Peru highlighted that the initiative includes internal diagnostic activities, capacity-building efforts, and the development of procedures and operational frameworks intended to support the safe and progressive integration of unmanned aircraft within into the national aviation system.

2.13.2 The presentation noted that the growth of UAS/RPAS operations in Peru has created the need to update the current framework and strengthen registration, authorization, and oversight mechanisms. In particular, it was reported that between 2018 and 2025, 99 incursions into controlled areas were recorded, and that out of an estimated 55,000 drones expected to be regulated, only around 6,000 aircraft are registered. This gap highlights the need for simpler, digital, and scalable processes.

2.13.3 The presentation also addressed the development of operational and administrative processes associated with remote pilot accreditation, examinations, licensing considerations, and operator oversight. Peru emphasized the importance creating structured procedures for documentation review, operational authorizations, and competency assessments, while also considering the practical implementation challenges associated with the growth of UAS operations in the country. Discussions highlighted the need to establish mechanisms capable of supporting both regulatory oversight and operational scalability.

2.13.4 Peru further discussed its interest in aligning national initiatives with international and regional approaches, including considerations related to standard scenarios, operational risk assessments, and harmonization with methodologies being adopted by other States and organizations. References were made to experiences and frameworks developed in other jurisdictions, including Brazil and EASA related concepts, as part of Peru's effort to evaluate potential implementation models suitable for the national context. Participants

exchanged views on the importance of regional cooperation, information exchange, and coordinated development of UAS regulatory frameworks across Latin America.

**2.14 Colombia – RAC 100 Ecosystem: Public and Private Approach for National Development –** The Colombian delegation presented the implementation of the RAC 100 framework and its role in fostering a comprehensive UAS ecosystem through coordinated engagement among public authorities and private stakeholders. Colombia highlighted the integration of multiple governmental entities, including Aerocivil, DIAN, MinTIC, MinCIT, Supervigilancia, and the Ministry of Defense, together with sectors such as agriculture, mining, construction, audiovisual services, security, transport, and public services. The presentation emphasized the importance of a robust legal and operational framework supported by Resolution 01983 of 2023, technical regulations for UAS equipment, strengthened customs controls, and the proposed Law Project 075/2025, which aims to balance operational safety, innovation, and economic development.

**2.14.1** Colombia further described the operational structure of RAC 100, including pilot certification (CIPU), operator certification, the RUAS registration system, and certified training centers (CIAC). The delegation explained the categorization of operations into Open, Specific, and Certified categories, enabling advanced operations such as BVLOS, delivery services, swarm operations, and specialized commercial applications. Colombia also showcased the progress achieved in the national UAS ecosystem, including thousands of registered UAS systems and certified pilots, digital authorization tools, geographic visualization systems, and the implementation of the “Pan Estratégico Aviación No Tripulada 2030,” focused on regulation, institutional capacity, technology systems, operational safety, civil-military coordination, and the promotion of a national UAS culture.

**2.14.2** The Colombian experience highlighted the importance of structuring the UAS/RPAS ecosystem not only from the perspective of flight authorization, but also through operator certification processes, requirements for key personnel, training centers, competency certificates, digital registries, and operational management systems. It also emphasized coordination with public and private entities to promote responsible use, strengthen oversight, and facilitate progressive integration of advanced operations into the national aviation system.

**2.15 Ecuador – Strategic UAS Roadmap and Operational Integration Model –** The Ecuadorian representative presented strategic roadmap for UAS integration, highlighting the development of the “Ecuadorian Model” for operational integration of unmanned aircraft systems within the SAM Region. The presentation described the transition from an initial RPAS regulation issued in 2020 toward a more comprehensive and risk oriented regulatory framework consolidated through RDAC 101, aligned with ICAO provisions, FAA Part 107 concepts, EASA operational categories, and the ongoing SRVSOP LAR developments.

**2.15.1** Ecuador representative emphasized the implementation of a regulatory architecture based on operational risk categories, including Open, Specific, and Certified operations, supported by mandatory registration, processes pilot authorizations, operator certification, insurance requirements, management of restricted zones and certification of training centers. The delegation also highlighted the use of legal and operational harmonization mechanisms allowing implementation without requiring major primary legislative reforms.

**2.15.2** Ecuador further presented its implementation plan for 2025-2026, including automation initiatives, institutional strengthening, inspector training, industry engagement, and UTM/ATM integration concepts. The representative highlighted significant operational achievements, including the approval of pioneering BVLOS routes in South America using SORA methodologies and the implementation of large-scale UAS registration systems with more than 2,400 registration requests processed. Ecuador also emphasized the integration of SMS/SSP principles into the unmanned aviation ecosystem and presented future objectives related

to advanced operations, certified category implementation, eVTOL preparedness, and increased institutional capacity. The presentation concluded with a proposal encouraging ICAO SAM States to analyze the Ecuadorian model as a potential basis for regional harmonization efforts related to UOC implementation and operational risk management frameworks.

**2.16 Bolivia – Implementation Challenges for UAS/RPAS in the Specific Category** – The Bolivian representative presented the status of UAS/RPAS implementation activities within the Specific Category framework under the Civil Aviation Authority (DGAC). The presentation highlighted ongoing activities related to operational certification requests, equipment unlocking procedures, harmonization of the national regulatory framework, and authorizations for aerial work operations involving drones. Bolivia explained that the authority is currently progressing through stages of review, approval, and publication of updated regulatory provisions aligned with international and regional developments, while simultaneously processing operational requests from industry stakeholders.

**2.16.1** Bolivia also identified several operational and regulatory challenges associated with unmanned aviation integration, including the adoption of updated ICAO Annexes and LAR provisions, procedures for equipment authorization, management of restricted areas, issuance of drone pilot licenses, and the development of qualified personnel within both industry and the authority. The delegation emphasized the importance of continued regulatory harmonization, coordination with operators, and participation in SRVSOP/SAM workshops and technical meetings to support the development of LAR 100, 101, and 102. Bolivia further noted the rapid growth of drone operations within national airspace and stressed the need for continuous regulatory updates and collaborative regional work to maintain operational safety while addressing the increasing demand for unmanned aviation activities.

**2.17 ZIPLINE – Large-Scale BVLOS Delivery Operations** – ZIPLINE presented its global experience conducting large-scale autonomous BVLOS delivery operations across multiple countries, including healthcare logistics, rural delivery operations, suburban and urban delivery services, and integration with UTM systems. The company highlighted that all operations are conducted BVLOS and supported by operational data accumulated through more than 30 million autonomous flight miles. ZIPLINE explained its operational model, where the company acts simultaneously as aircraft manufacturer, operator, maintenance organization, and UTM service provider, enabling integrated operational oversight and scalable delivery systems. The presentation detailed two operational platforms, including long-range rural delivery aircraft and a newer urban/suburban delivery platform designed for highly precise deliveries in densely populated environments.

**2.17.1** ZIPLINE emphasized the importance of scalable regulatory frameworks capable of supporting rapid operational growth, remote operation centers, one many operator ratios, adverse weather operations, and flexible change management processes. The company described its experience operating under FAA Part 135 approvals and exemptions, including discussions surrounding future implementation of Part 108 regulations and the challenges associated with standards development and certification pathways. During the discussion, participants explore topics including SORA implementation, operational scalability, design approvals, BVLOS regulatory pathways, safety management, maintenance programs, and the importance of data-driven approaches for risk assessments and airspace integration. ZIPLINE also highlighted the need for harmonized and scalable regulatory processes capable of supporting real-world commercial operations and continuous operational improvements.

**2.17.2** This experience highlighted that large-scale BVLOS operations require regulatory frameworks capable of supporting change management processes, data-driven oversight, remote operations centers, controlled maintenance, operational traceability, and verifiable mitigations. Accordingly, the future regional framework should consider mechanisms to assess overall operator capability, not only the technical characteristics of the unmanned aircraft.

2.18 **WING – Urban Drone Delivery and UTM Integration** – WING presented its global drone delivery operations and regulatory experience, highlighting more than 800,000 commercial deliveries conducted across the United States, Europe, and Australia. The company described its operational model based on lightweight, highly automated delivery aircraft designed for suburban and urban operations, including food delivery, retail logistics, and medical transportation between hospitals. WING explained its use of highly automated systems, remote supervision models, and scalable operational structures supported by UTM/UAS Service Supplier interoperability mechanisms and strategic deconfliction methodologies. The company emphasized that its operations are conducted without visual observers and supported by highly redundant aircraft architectures, automated detect-and-avoid systems, and low-altitude airspace coordination mechanisms.

2.18.1 The presentation also highlighted the operational integration achieved through the UTM Implementation Pilot Program in the United States, enabling multiple operators to safely share low-altitude airspace through automated flight intent exchanges and interoperability standards. Participants discussed SORA implementation experiences in Europe, remote supervision concepts, community acceptance, operational safety, cybersecurity, and public perception of urban drone delivery operations. WING highlighted the importance of proactive community engagement, environmental considerations, and scalable regulatory frameworks to support high-density autonomous operations while maintaining operational safety and public trust.

2.18.2 The presentation also highlighted that social acceptance, cybersecurity, interoperability among UTM/UAS service providers, and automated flight intent coordination will be key elements for high-density urban or suburban operations. These aspects should be considered in the regional roadmap as part of a progressive implementation combining operational safety, public trust, and technological capability.

2.19 **DRONES S.A. (Panama) – Medical Delivery Corridor Operations** – The Panamanian company Drones S.A. presented its operational experience implementing medical delivery drone corridors in remote regions of the country. The presentation described the development of a humanitarian-oriented operational framework focused on the transportation of medicines and healthcare supplies to isolated communities with limited access to transportation infrastructure. Representative explained the establishment of the country's first drone corridor, composed of multiple vertiports and approximately 100 kilometers of aerial routes connecting remote locations through coordinated BVLOS operations. The representative highlighted that the initiative was developed in close coordination with the Panamanian Civil Aviation Authority and multiple governmental entities, requiring nearly two years of joint planning, route analysis, operational validation, and infrastructure deployment prior to operational implementation.

2.19.1 Grupo Drones S.A. representative further detailed the operational architecture supporting the corridor, including meteorological stations, communication systems, operational control centers, vertiports, and route monitoring tools designed to ensure both aviation safety and operational safety. The presentation emphasized the importance of pilot certification, operational authorizations, recurrent training, and continuous coordination with aviation authorities to support safe BVLOS operations in geographically challenging areas. The delegation also stressed the social impact of the initiative, highlighting the reduction in delivery times for medical supplies and the broader benefits of unmanned aviation technologies for healthcare access in underserved communities.

2.19.2 The Panamanian experience was considered a practical example of progressive implementation of BVLOS operations through defined operational corridors. It highlighted the importance of validating routes, obstacles, communications, weather stations, control centers, maintenance, pilot training, and continuous coordination with the aviation authority. It also demonstrated that operational corridors can serve as a useful tool to facilitate Specific Category operations for health or humanitarian purposes, provided that operational conditions, mitigations, and oversight mechanisms are clearly defined.

**2.20 Paraguay – Regulatory Situation, Air Navigation Challenges, and Utility Drone Technologies** – The Paraguayan representatives presented the current national regulatory framework and operational situation related to UAS/RPAS integration under DINAC R1103, highlighting that Paraguay currently authorizes UAS operations in non-segregated airspace subject to prior DINAC approval and coordination with air navigation providers. The presentation explained that operational approvals are issued through NOTAM procedures and currently include restrictions related to VLOS-only operations, daytime, operations flights over populated areas, controlled airspace access, and minimum separation distances from people, buildings, and public events. Paraguay representatives also emphasized that the national Aeronautical Code still does not formally contemplate drones or RPAS concepts, requiring future legislative modernization to support continued development of unmanned aviation operations in the country.

2.20.1 The representatives further identified several institutional and technical challenges associated with the implementation of a scalable UAS ecosystem, including the absence of specific procedures for UAS training centers, limited inspector specialization, lack of dedicated certification tools and checklists, and the need to establish clearer operational responsibilities within Class G airspace. Paraguay particularly highlighted the growing operational relevance of agricultural spraying drones and logistics drones, emphasized concerns related to separation between agricultural drones and manned fumigation aircraft, surveillance requirements, such as ADS-B, communication-loss procedures, operational endurance limitations, and future applicability of airworthiness and maintenance regulations for advanced UAS operations. The presentation also referenced the increasing use of advanced propulsion technologies, including combustion, hybrid, and turbine-based propulsion systems, reflecting the gradual evolution of utility-oriented UAS operations within the national context.

2.20.2 Paraguay’s experience highlighted the need for the regional roadmap to consider different levels of regulatory and institutional maturity among States. Accordingly, SRVSOP should consider supporting material for procedures, checklists, inspector manuals, training center guidelines, coordination criteria with air navigation services, and guidance on the applicability of airworthiness, maintenance, and oversight requirements for agricultural, logistics, or cargo operations.

**2.21 Venezuela – Regulatory Development and National Roadmap for UAS/RPAS Integration**  
The Venezuelan representative presented the ongoing national efforts related to the development and implementation of a regulatory framework for UAS/RPAS operations under the leadership of the Instituto Nacional de Aeronáutica (INAC). The presentation highlighted the progressive evolution of the Venezuelan UAS regulatory ecosystem since 2016, including interministerial coordination, engagement with industry and military stakeholders, development of registration and operational structures, training initiatives, and exchanges of information with ICAO and regional authorities.

2.21.1 Venezuela representative emphasized the adoption of a holistic vision for unmanned aviation integration, considering operational safety, airworthiness, security, training, airspace management, certification, infrastructure, and surveillance as interconnected components necessary to ensure safe, efficient, and sustainable UAS operations. Also referenced ICAO guidance and the future applicability of Annex 6 Part IV key drivers for national regulatory development.

2.21.2 The presentation further described Venezuelan regulatory roadmap toward 2030, including the implementation of the proposed RAV 100 regulation for Open and Specific category and development of RAV 102 for category RPAS operations aligned with ICAO Annex 6 Part IV provisions. Venezuela explained that the proposed framework includes provisions related to registration, operational rules, operator certification, pilot certification, SMS requirements, and operational authorizations. The delegation also highlighted the importance of inspector training, organizational modernization, integration between ATM and UTM concepts, engagement with security and military bodies, and public awareness campaigns to support the safe expansion of unmanned aviation activities. The presentation concluded by emphasizing the importance of clear, simple, and practical

regulations capable of supporting both operational safety and the sustainable development of the UAS sector in Venezuela.

### 3. ROADMAP DEVELOPMENT WORKS

3.1 To initiate the panel discussions, a plenary meeting was held to provide initial work guidance, followed by breakout sessions of the OPS, AIR, PEL, and ANS Panels. The results of these discussions, premises, and final guidelines are presented below. These guidelines will serve as inputs for the technical panel work of SRVSOP and as agreed, will be addressed within the specific panels this year to support the development of new regulations.

#### *Airworthiness (AIR)*

3.2 Regarding airworthiness, experts established the technical and regulatory premises that should be considered in developing the chapter applicable to continuing airworthiness maintenance for UAS in the specific category, under a risk-proportionate approach.

3.3 During discussions, participants agreed on the need to establish minimum airworthiness requirements, maintenance criteria, operator responsibilities, technical records, and harmonized guidance material for SRVSOP States, considering operational scenarios and risk-based mitigations.

3.4 It was also recommended that future regulatory development include provisions related to continuing airworthiness maintenance, technical procedures, maintenance personnel, technical documentation, and oversight criteria by CAAs.

3.5 **Appendix B** contains the detailed technical premises, topics analyzed, and proposals and recommendations discussed during the meeting.

#### *Air Navigation Services (ANS)*

3.6 For air navigation services, work was developed within RPEANS/17, identifying four lines of action and key premises addressed during panel sessions.

3.7 The **first premise** focused on determining whether current airspace structures available for manned aviation also allow safe and efficient development of unmanned aviation in the specific category, or whether adjustments, modifications, or new proposals are required in airspace structure and management.

3.8 The **second premise** addressed the requirements necessary to enable UAS operations in the specific category above 400 feet, including UTM implementation, ATC coordination, NOTAM publication, and other mechanisms required to ensure safe and orderly integration.

3.9 The **third premise** reviewed the UTM CONOPS developed by SAM IG in 2023 to assess whether the current model satisfies specific category operational requirements and whether it adequately incorporates new user, State, and developer needs.

3.10 The **fourth premise** addressed the need for a comprehensive review of the existing CONOPS based on airspace structure work, requirements identified in the second premise, and modifications to the 2023 UTM model, ensuring overall system coherence and interoperability.

### **Licensing (PEL)**

3.11 The PEL Panel analyzed elements necessary to establish a harmonized regional framework applicable to remote pilots in specific category UAS operations, including competencies, training, assessment, ratings, recognition of prior experience, CAA technical capacity, procedures, and oversight.

3.12 As a result, it was identified that the PEL approach must be based on demonstrable competencies proportional to operational risk and type of operation, not limited to traditional licensing. Accordingly, LAR UAS should consider instruments such as competency certification, authorizations, and/or ratings, as applicable.

3.13 Minimum requirements for theoretical and practical training, initial and recurrent assessment, risk-proportional medical fitness, recognition of prior experience, and criteria for training centers, instructors, and UAS programs were also highlighted.

3.14 Finally, effective implementation will require strengthening CAA technical capacity, developing procedures and guidance material, and ensuring coordination of PEL with OPS, AIR, ANS, and AGA.

3.15 **Appendix C** contains the PowerPoint presentation with technical premises identified by PEL experts during the breakout session.

### **Operations (OPS)**

3.16 During the OPS specialists' meeting for the development of regulations in the Open and Specific categories, the following premises were identified:

- a) Risk-proportionate analysis.
- b) High-level regulatory language, with details in guidance material (e.g., risk assessment methodologies, standard scenarios).
- c) Prioritization of standard scenarios (photography, agriculture, façade cleaning, aerodrome environment operations, urban delivery, etc.). Operations outside standard scenarios should be authorized on a case-by-case basis. Consider "sandboxes," where the CAA allows an operator to conduct operations under a trial scenario (typically two years) to collect data for future standard scenario development.
- d) Qualified CAA technical personnel and analysis of resource needs for processes and oversight.
- e) All rules for Open and Specific categories in a single regulation.
- f) Consider domestic application only, to create a harmonized operational baseline that can evolve toward international operations.

3.16.1 A possible general structure was identified, considering a single regulation covering all categories:

## STRUCTURE OF LAR UAS

**Preamble** (interaction with other State entities, ministries, agencies)

### Chapter A: General Provisions

- Definitions and abbreviations
- Operator/pilot responsibilities
- Applicability
- Definition of categories
- Use of psychoactive substances
- General operating rules, including protection of private property and fundamental rights (privacy, intimacy)

### Chapter B: Specific Category

- Types of authorization (scenario-based, operational authorization, or UOC authorization)
- Requirements for remote pilot and operator
- UAS operator registration (level of interaction with CAA)
- Airworthiness (AIR panel responsibility)
- Continuing airworthiness maintenance (AIR panel responsibility)

### Chapter C: Registration, Marks, and Identification of the UA

- Simplified method
- Traditional method

### Chapter D: Violations

- Non-compliance requirements and enforcement measures

### *Aerodromes (AGA)*

3.17 Although no dedicated AGA panel was convened, discussions within the OPS and ANS groups identify several important aerodrome-related considerations associated with Specific Category operations. Participants highlighted the need to develop requirements for emerging infrastructures such as:

3.17.1 Vertiports and drone ports: Need to define requirements for new infrastructure regarding dimensions, minimum equipment (meteorological systems, customs for international operations, public health, etc.).

3.17.2 UAS operations inside aerodromes: Guidance for a predefined risk assessment procedure and mitigation measures for operations within and around aerodrome environments (standard scenarios). Coordination with ANS for flight authorization.

3.17.3 Control of aerodrome environment activities: Strategies for managing and monitoring drones in approach areas and adjacent zones. Preparation of airport and air navigation infrastructure against drone-related threats. Coordination with ANS and AVSEC.

## 4. CONCLUSION

4.1 The workshop demonstrated the growing operational maturity and strategic importance of UAS/RPAS operations across the SAM Region and reinforced the need for a coordinated and harmonized regional approach for the implementation of the Specific Category framework. Participants recognized that the rapid expansion of unmanned aviation activities, including BVLOS operations, humanitarian missions, logistics services, agricultural applications, meteorological observations, and emerging advanced air mobility concepts, requires agile, scalable, and risk-based regulatory structures capable of balancing operational flexibility with aviation safety and public trust.

4.2 The discussions further highlighted that successful implementation would depend not only on the development of harmonized regulations, but also on the establishment of supporting mechanisms such as guidance materials, inspector procedures, training programs, operational authorization methodologies, UTM integration concepts, and inter-agency coordination frameworks. Participants emphasized the importance of maintaining close alignment with ICAO global developments while ensuring that regional operational experiences and lessons learned continue contributing to international discussions related to UAS integration.

4.3 The roadmap discussions conducted during the workshop established the technical and strategic foundations for the future development of the LAR UAS framework applicable to the Open and Specific Categories. The agreed phased approach, involving the coordinated participation of OPS, AIR, PEL, ANS, and AGA domains, is intended to support a coherent and interoperable regulatory ecosystem throughout the region. Participants also recognized that continuous coordination among States, adequate allocation of technical and financial resources, inspector capacity-building, and engagement with industry stakeholders will be essential to ensure sustainable implementation and effective oversight of increasingly complex UAS operations.

4.4 The meeting reaffirmed the role of regional cooperation as a critical enabler for future interoperability, mutual recognition, and safe cross-border UAS operations within the SAM Region. The workshop outcomes are expected to serve as a foundational input for the ongoing development of global harmonized regulations, operational guidance, and implementation strategies capable of supporting the safe and progressive integration of unmanned aviation into the regional and global aviation system.

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**APPENDIX A**

Workshop/Meeting Agenda of the SAM/SRVSOP Experts on the Roadmap for the Implementation of UAS/RPAS in the Specific Category

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# **SRVSOP/SAM Experts Workshop/Meeting: Roadmap for the Implementation of UAS in the Specific Category**

## **Draft Agenda**

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### **Meeting of the PEL, OPS, AIR, ANS and AGA Expert Panels**

**Organized by:** ICAO SAM and SRVSOP

**Venue:** ICAO South American Regional Office

**Date:** 11 to 15 May 2026

**Duration:** Five (5) days

**Modality:** In-person

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### **GENERAL OBJECTIVE**

To define the roadmap for the development and implementation of the regulation applicable to UAS/RPAS in the specific category (LAR 102) and associated regulations, through multidisciplinary technical analysis, the exchange of experiences, and the consolidation of common regulatory criteria for the SRVSOP States and the SAM Region.

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## DÍA 1 – DAY 1 – STRATEGIC FRAMEWORK AND INTERNATIONAL EXPERIENCE

<b>Hora / Time</b>	<b>Actividad / Activity</b>	<b>Responsible / Responsible</b>
<b>08:00 – 08:30</b>	Registro de participantes / Registration of participants	
<b>08:30 – 9:00</b>	Sesión de apertura / Opening session <ul style="list-style-type: none"> <li>• Palabras de apertura / Opening remarks</li> <li>• Objetivos, y metodología de trabajo / Objectives and working methodology</li> </ul>	OACI SAM / ICAO SAM (V. Chavez)
<b>9:00 – 9:30</b>	<ul style="list-style-type: none"> <li>• Perspectiva general de UAS de la OACI / ICAO UAS global overview / ICAO UAS Global Overview</li> </ul>	OACI Sede / ICAO HQ (L. Haberfeld)
<b>9:30 – 10:30</b>	<ul style="list-style-type: none"> <li>• Operaciones UAS y lecciones aprendidas – EASA / UAS operations and lessons learned – EASA</li> </ul>	EASA (Justin Chirea)
<b>10:30 – 11:00</b>	Pausa – café / Coffee break	
<b>11:00 – 11:30</b>	<ul style="list-style-type: none"> <li>• SRVSOP – Contexto regional / Regional context</li> </ul>	SRVSOP (V. Chavez)
<b>11:30 – 12:00</b>	<ul style="list-style-type: none"> <li>• SRVSOP – Marco regulatoria RPAS / SRVSOP – Regulatory framework RPAS</li> </ul>	SRVSOP (J. Barrios)
<b>12:00 – 13:30</b>	Almuerzo / Lunch	
<b>13:30 – 14:00</b>	<ul style="list-style-type: none"> <li>• Entidades de la ONU: Lecciones aprendidas de UAS de la UNODC / UN entities: UAS lessons learned from UNODC</li> </ul>	UNODC
<b>14:00 – 14:30</b>	<ul style="list-style-type: none"> <li>• Entidades de la ONU: Lecciones aprendidas de UAS de la WMO / UN entities: UAS lessons learned from WMO</li> </ul>	WMO (N. Rivaben)
<b>14:30 – 15:00</b>	<ul style="list-style-type: none"> <li>• Materiales guía de UAS de la OACI / ICAO UAS Guidance material</li> </ul>	OACI Sede / ICAO HQ (L. Haberfeld)



## DÍA 2 – EXPERIENCIAS REGIONALES / REGIONAL EXPERIENCES

Hora / Time	Actividad / Activity	Responsible / Responsible
<b>09:00 – 10:30</b>	Experiencia regional: UAS en Brasil – Operaciones, certificación y lecciones aprendidas / Regional experience: UAS in Brazil – Operations, certification and lessons learned	ANAC BR (R. Josino; K. Jesuino)
<b>10:30 – 11:00</b>	Pausa – café / Coffee break	
<b>11:00 – 12:30</b>	Experiencia regional: UAS en Colombia / Regional experience: UAS in Colombia	UAEAC (M. Rodriguez)
<b>12:00 – 13:30</b>	Almuerzo / Lunch	
<b>13:30 – 14:15</b>	Experiencia regional: UAS en Perú / Regional experience: UAS in Peru	DGAC Peru (A Junior, R. Quiroga)
<b>14:15 – 14:30</b>	Pausa – café / Coffee break	
<b>14:30 – 15:00</b>	Experiencia regional: UAS en Perú / Regional experience: UAS in Peru	DGAC Peru (
<b>15:00 – 15:30</b>	<p><b>Panel de discusión / Panel discussion</b></p> <ul style="list-style-type: none"> <li>• Identificación de buenas prácticas que pueden ser integradas a la región. / Identification of best practices for regional integration</li> </ul>	Todos / All



### DÍA 3 – EXPERIENCIAS REGIONALES Y DE LA INDUSTRIA / REGIONAL AND INDUSTRY EXPERIENCES

Hora / Time	Actividad / Activity	Responsible / Responsible
<b>09:00 – 09:15</b>	Resumen del día anterior / Summary of the previous day	OACI SAM / ICAO SAM
<b>09:15 – 10:30</b>	Experiencia regional: Estados SAM / Regional experience: SAM States	
<b>10:30 – 11:00</b>	Pausa – café / Coffee break	
<b>11:00 – 11:30</b>	Perspectiva de los operadores: Zipline / Operators' perspective: Zipline	Zipline (Okeoma Moronu)
<b>11:30 – 12:00</b>	Perspectiva de los operadores: Wing / Operators' perspective: Wing	Wing (P. Raju)
<b>12:00 – 13:30</b>	Almuerzo / Lunch	
<b>13:30 – 14:00</b>	Perspectiva de los operadores: Grupo Drones S.A. / Operators' perspective: Grupo Drones S.A.	Drones (N. Guerra)
<b>14:00 – 15:30</b>	<p><b>Panel de discusión: / Panel discussion:</b></p> <ul style="list-style-type: none"> <li>• Requerimientos regionales para operaciones de UAS en la categoría específica – operaciones transfronterizas / Regional requirements for UAS operations in the specific category – cross-border operations</li> <li>• Insumo para la hoja de ruta / Inputs for the roadmap</li> </ul>	Todos / All
<b>14:50 – 15:00</b>	Pausa – café / Coffee break	



**DÍA 4 – SESIONES DE TRABAJO DE LOS PANELES: Desarrollo de hoja de ruta y estructura reglamentaria / PANEL WORKING SESSIONS: Roadmap development and regulatory structure**

Hora / Time	Actividad / Activity	Responsable / Responsible
09:00 – 09:15	Resumen del día anterior / Summary of the previous day	OACI SAM / ICAO SAM
09:15 – 15:00	<p>Sesiones de trabajo en paneles: / Panel working sessions:</p> <p>Trabajo en salas separadas (con observadores): / Separate breakout sessions (with observers):</p> <ul style="list-style-type: none"> <li>• <b>PEL:</b> competencias, habilitaciones y centros de instrucción UAS / UAS competencies, qualifications and training centres</li> <li>• <b>OPS:</b> autorizaciones operacionales y gestión del riesgo / operational authorizations and risk management</li> <li>• <b>AIR:</b> requisitos técnicos, aeronavegabilidad y mantenimiento / technical requirements, airworthiness and maintenance</li> <li>• <b>ANS:</b> integración UAS/RPAS – ATM/UTM / UAS/RPAS integration – ATM/UTM</li> <li>• <b>AGA:</b> infraestructura, vertipuertos y operación en superficie / infrastructure, vertiports and ground operations</li> </ul> <p><b>Resultado del día: / Daily output:</b></p> <ul style="list-style-type: none"> <li>• Informe borrador de grupo que contenga: / Draft group report including: <ul style="list-style-type: none"> <li>○ Hoja de ruta preliminar por panel y, de darse el caso, la estructura reglamentaria / Preliminary roadmap by panel and, where applicable, the regulatory structure</li> <li>○ Identificación de tareas y responsables / Identification of tasks and responsible entities</li> </ul> </li> </ul>	Todos / All



## **DÍA 5 – INTEGRACIÓN, CONCLUSIONES Y ACUERDOS / INTEGRATION, CONCLUSIONS AND AGREEMENTS**

<b>Hora / Time</b>	<b>Actividad / Activity</b>	<b>Responsable / Responsible</b>
<b>09:00 – 10:30</b>	Presentación de resultados por panel / Presentation of results by panel	OACI SAM / ICAO SAM
<b>10:30 – 11:00</b>	Pausa – café / Coffee break	
<b>11:00 – 11:30</b>	Revisión y aprobación del informe / Review and approval of the report	OACI SAM / ICAO SAM
<b>11:30 – 11:45</b>	Closing session	

**APPENDIX B**

Premises for Airworthiness

# Premisas de Aeronavegabilidad

## **Fundamentos Técnicos de Aeronavegabilidad**

Los requisitos técnicos aseguran operaciones seguras basadas en análisis de riesgo operacional coherente con la misión prevista.

## **Sistemas Críticos y Diseño Fail -safe**

Incluye enlace comando-control, detección y evitación, y principios de diseño que aseguran la redundancia y seguridad.

## **Procedimientos y Registros de Aeronavegabilidad**

Manual de vuelo, mantenimiento y registros garantizan operación estandarizada, trazabilidad técnica y cumplimiento continuo.

## **Material de Orientación y Cumplimiento**

Materiales como MEI y MAC apoyan a explotadores e inspectores en definir requisitos dinámicos según riesgos.

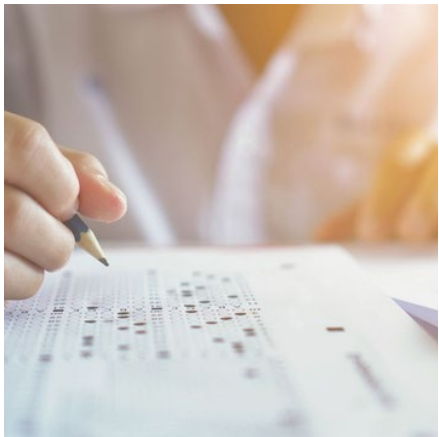


# Desarrollo Normativo y Material de Orientación



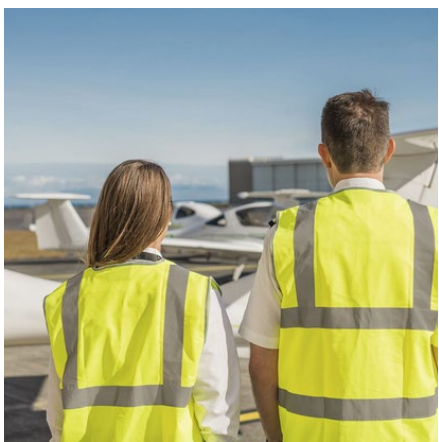
## Material de Orientación Normativa

Los materiales como MEI y MAC facilitan la interpretación y aplicación homogénea de reglamentos, promoviendo el cumplimiento efectivo.



## Documentos Modelo y Supervisión

Se crean documentos modelo para mantenimiento de aeronavegabilidad que sirven de referencia y herramientas de supervisión para AAC.



## Consolidación y Capacitación

Unificar requisitos en un reglamento único, complementado con capacitación, fortalece la adopción normativa y la cultura de seguridad.

# Mantenimiento de la Aeronavegabilidad

## Procedimientos de Mantenimiento

El mantenimiento debe seguir manuales del fabricante con inspecciones, acciones correctivas y límites operativos claros para seguridad.

## Actualizaciones de Software

La gestión de actualizaciones de software es crucial para mejorar el desempeño y la seguridad de los UAS.

## Enfoque Basado en Riesgo

El mantenimiento se ajusta según el riesgo para optimizar recursos sin comprometer la seguridad operacional.





# Responsabilidades y Registros

## **Responsabilidad del Explotador**

El explotador debe asegurar que el mantenimiento sea realizado por personal calificado según los criterios establecidos para seguridad operacional.

## **Gestión de Registros**

Los registros de mantenimiento deben documentar todos los trabajos realizados, en formatos electrónicos o físicos, para garantizar trazabilidad.

## **Integridad y Supervisión**

Se prohíben alteraciones en registros firmados, fortaleciendo la integridad y facilitando la supervisión por parte de la autoridad.

## PREMISAS DE AERONAVEGABILIDAD

1. Los requisitos técnicos deben derivarse del análisis de riesgo operacional, sistemas de navegación adecuados para la operación (CE-2)
2. Establecer requisitos mínimos (CE-2)
  - 2.1 Enlace C2
  - 2.2 Manual de vuelo
  - 2.3 Fail of Safe
  - 2.4 DAA
  - 2.5 Procedimiento de mantenimiento
  - 2.6 Registros
  - 2.7 Otros requisitos de aeronavegabilidad serán definidos de acuerdo al riesgo operacional.

### 3. Material de orientación (CE-5)

3.1 Desarrollo Métodos Explicativos e informativos (MEI) y medios aceptables de cumplimiento (MAC)

3.2 Desarrollo de un documento modelo para soportar el mantenimiento de la aeronavegabilidad de acuerdo a los escenarios que sean desarrollados por operaciones.

3.3 Desarrollo de procedimientos y listas de verificación aplicables a los inspectores de las AAC (MIO, MIA o equivalente) (CE-5)

4. Establecer los criterios que se aplicarán para el cumplimiento del mantenimiento serán los establecidos del análisis de riesgo operacional (ítem (1)).

1. En los casos en el que la AAC haya emitido una autorización de diseño, el explotador podrá solicitar un certificado de aeronavegabilidad categoría especial.
2. Considerar establecer todos los requisitos comunes en un solo reglamento (UAS 100).
3. Desarrollar cursos sobre el reglamento y material de orientación (CE-4)



## **Mantenimiento de la aeronavegabilidad de los UAS categoría específica**

### 102.xxx **Generalidades**

Este capítulo prescribe los requisitos para el mantenimiento de la aeronavegabilidad que un explotador debe cumplir para garantizar el mantenimiento de los UAS de categoría específica.

### 102.xxx **Procedimientos para mantenimiento**

Desarrollar los requisitos que aseguren la aeronavegabilidad del UAS. Por ejemplo:

- El explotador de un UAS en la categoría específica deberá mantener el UAS en condiciones adecuadas para un vuelo seguro mediante acciones o inspecciones, de conformidad con las instrucciones del manual o documento de mantenimiento.
- Manual o documento de mantenimiento debe establecer requisitos para el mantenimiento de la aeronavegabilidad.
- Actualización de los software de vuelo, en caso sea aplicable.
- Establecer requisitos aplicables a UAS de riesgo elevado correspondientes a reparaciones y modificaciones establecidas por el fabricante; así como las recomendaciones emitidas por el fabricante o la AAC, cuando sea aplicable.
- Etc.....

102.xxx ~~Responsabilidades del explotador y del~~ **personal de mantenimiento de UAS**

El explotador de UAS categoría específica debe garantizar que el mantenimiento de la aeronave o de cualquier componente del mismo sea realizado por personal calificado, el cual podrá ser designado por el mismo explotador.

102.100 ~~Técnico de mantenimiento de UAS (UMT)~~

102.xxx **Registros de mantenimiento**

- El titular de un UOC definirá el formato electrónico o un libro de registro personal en donde se registrará en él todos los trabajos realizados en la aeronave y sus componentes.
- El titular de un UOC definirá la forma y la información que debe contener un libro de registro requerido en punto anterior, y la manera en que dicho libro de registro se mantendrá el mantenimiento realizado.
- No se realizarán alteraciones al libro de registro una vez que éste ha sido firmado por la persona designado.
- Establecer la vigencia de los registros.

102.xxx      **Instrucciones para el mantenimiento**

El titular de un UOC debe contar con las instrucciones para el mantenimiento de la aeronavegabilidad proporcionadas por el fabricante.

102.xxx      ~~Liberación del mantenimiento~~

**APPENDIX C**

Premises for Personnel Licensing

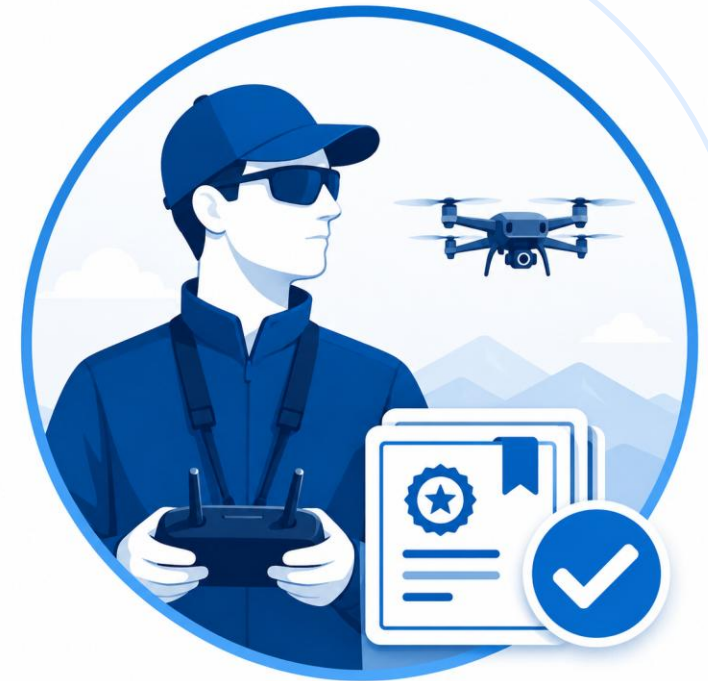
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# Premisas técnicas del Panel PEL

Hoja de ruta para la implementación de UAS/RPAS en la categoría específica

12 premisas para ordenar requisitos, competencias, formación, evaluación y vigilancia PEL.

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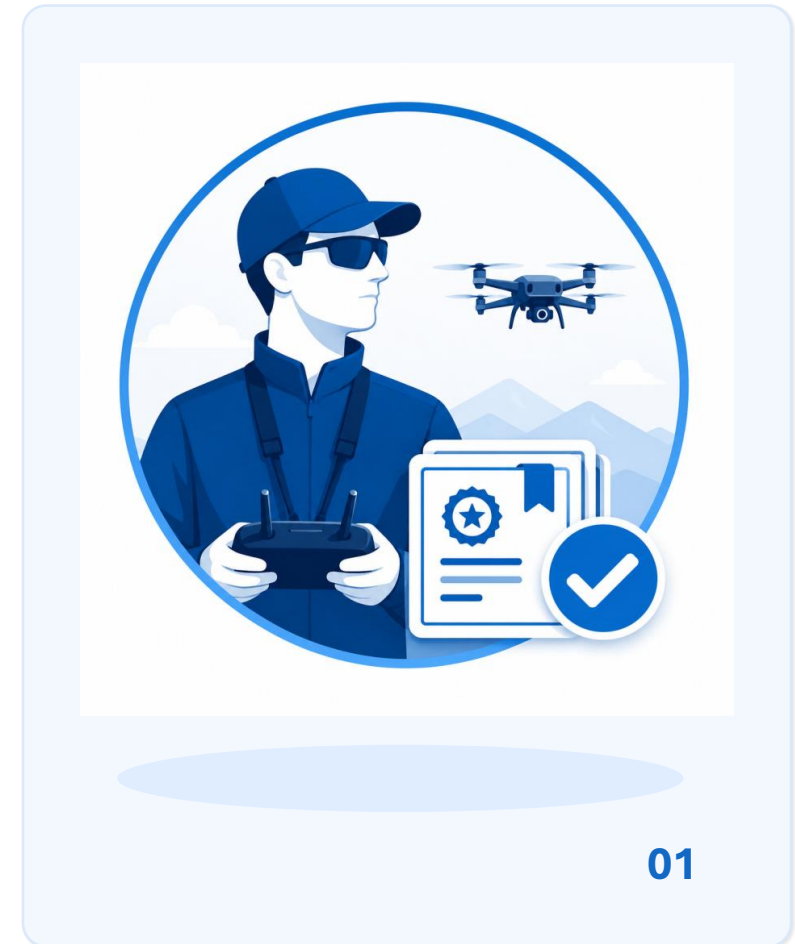
## Premisa 01

# Instrumento PEL aplicable al piloto a distancia (CE-2)

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Desarrollar en el LAR UAS 102 los requisitos para la emisión, renovación, reconocimiento, convalidación, conversión, suspensión o cancelación del instrumento PEL aplicable al piloto a distancia en categoría específica, considerando licencia, certificado de competencia, autorización y/o habilitaciones según el tipo de operación y nivel de riesgo.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*

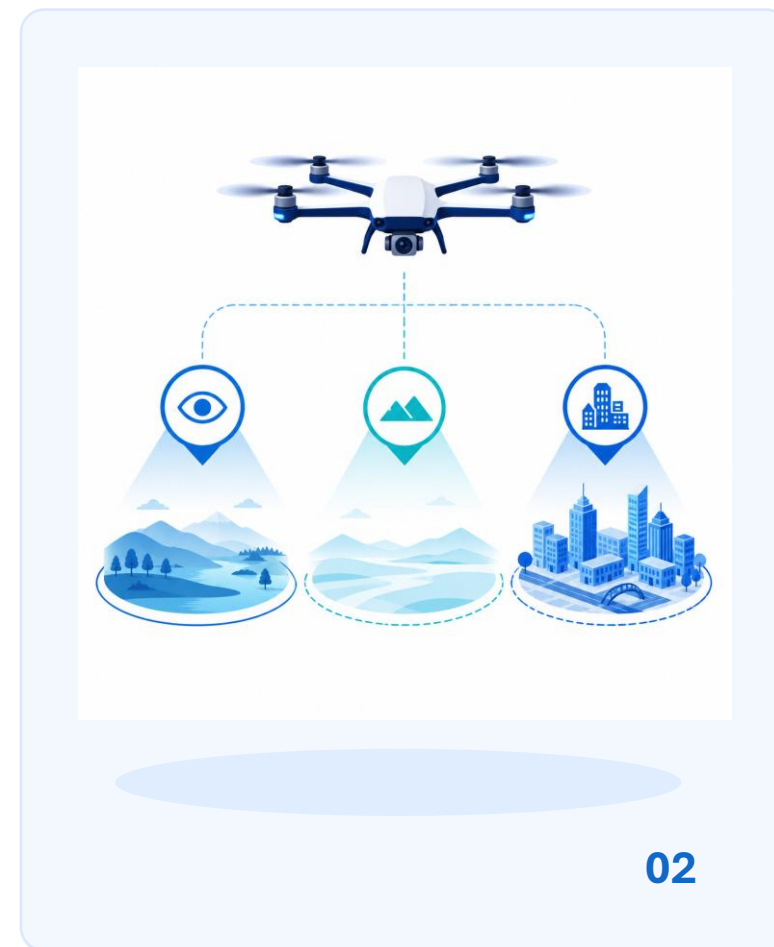


# Competencias y habilitaciones por escenario operacional (CE-2)

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Definir competencias mínimas y adicionales para operaciones VLOS, BVLOS, urbanas, agrícolas, inspecciones lineales, operaciones cerca de aeródromos, múltiples UAS, transporte/entrega u otras actividades especializadas.

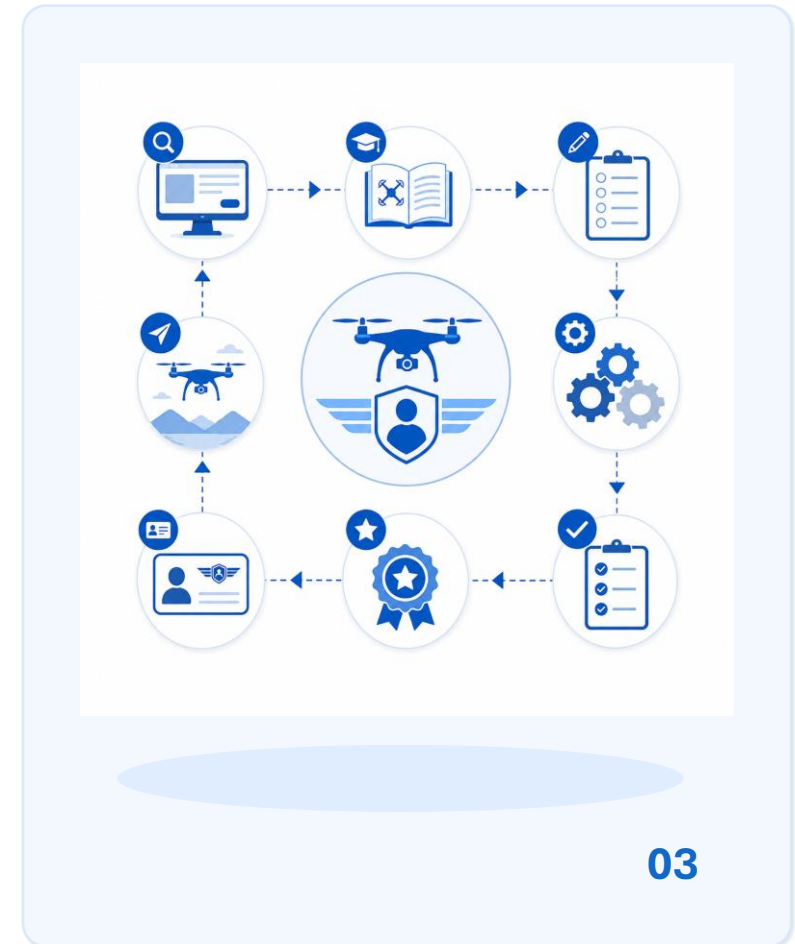
*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



# Reconocimiento de experiencia, formación y licencias previas (CE-2)

Establecer criterios para reconocer licencias LAR 61 o LAR 65, experiencia previa en drones, formación nacional o extranjera, cursos de fabricantes y competencias previamente demostradas.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*

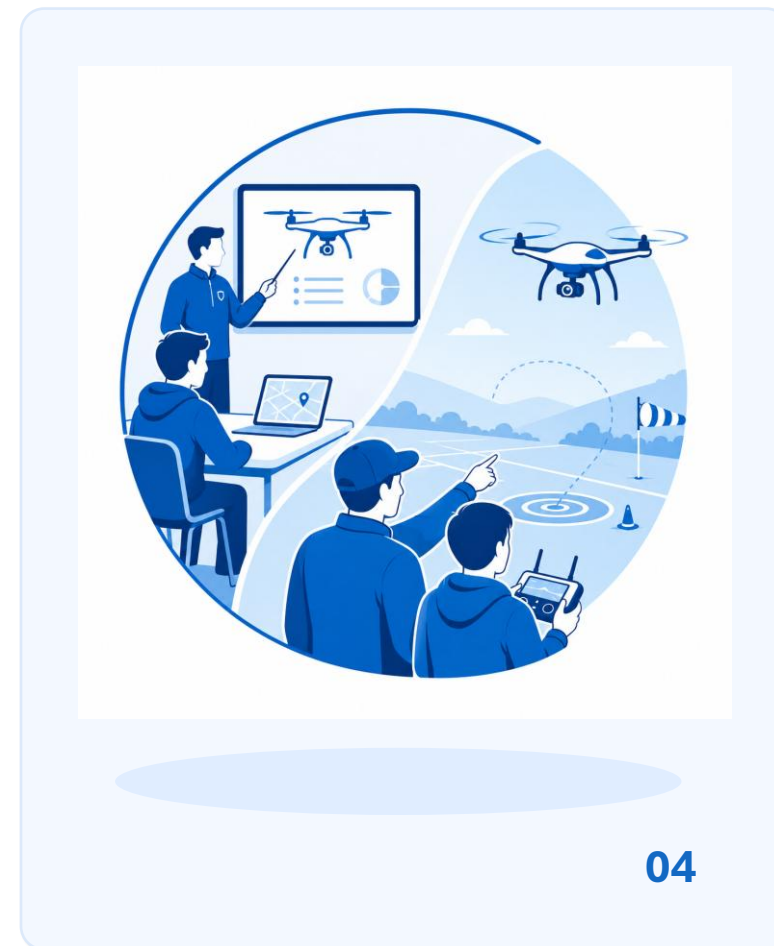


## Formación teórica y práctica (CE-2)

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Establecer requisitos mínimos de formación teórica y práctica en centros de instrucción UAS autorizados, CIAC certificados, explotadores aprobados o fabricantes, siempre bajo programas aceptados o aprobados por la AAC.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



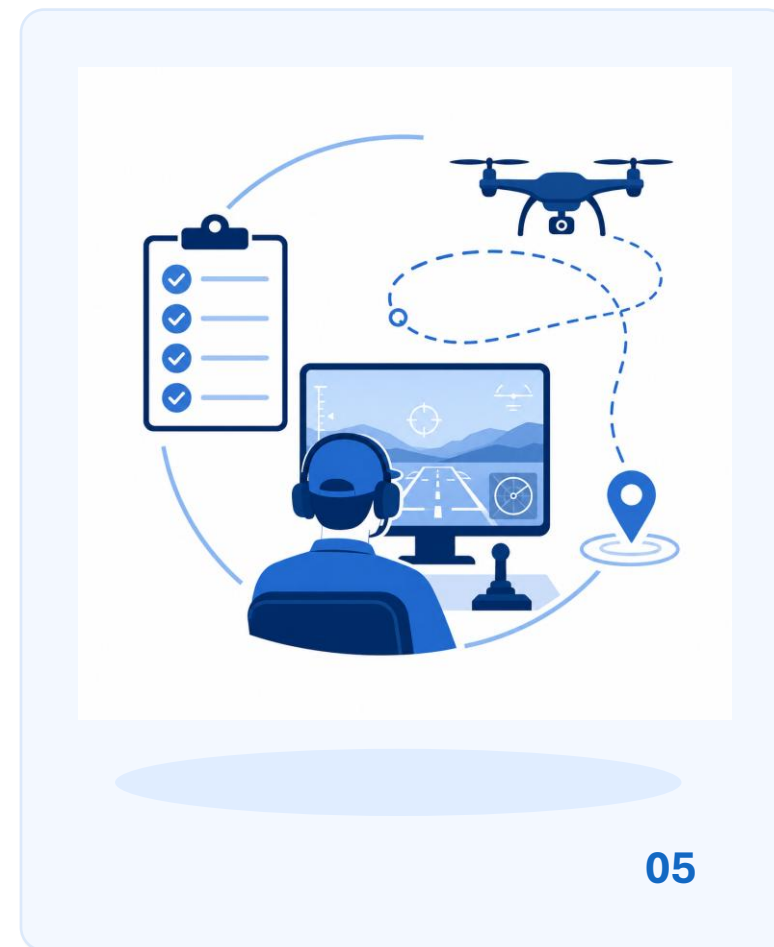
04

## Evaluación inicial, recurrente y por diferencias (CE-2)

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Definir criterios de evaluación teórica, práctica, simulada, recurrente y por diferencias, especialmente ante cambio de UAS, software, operación, escenario o nivel de riesgo.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



## Premisa 06

# Aptitud médica proporcional al Riesgo (CE-2)

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Definir criterios médicos proporcionales a la complejidad y riesgo de la operación, evitando aplicar automáticamente esquemas de aviación tripulada cuando no correspondan.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



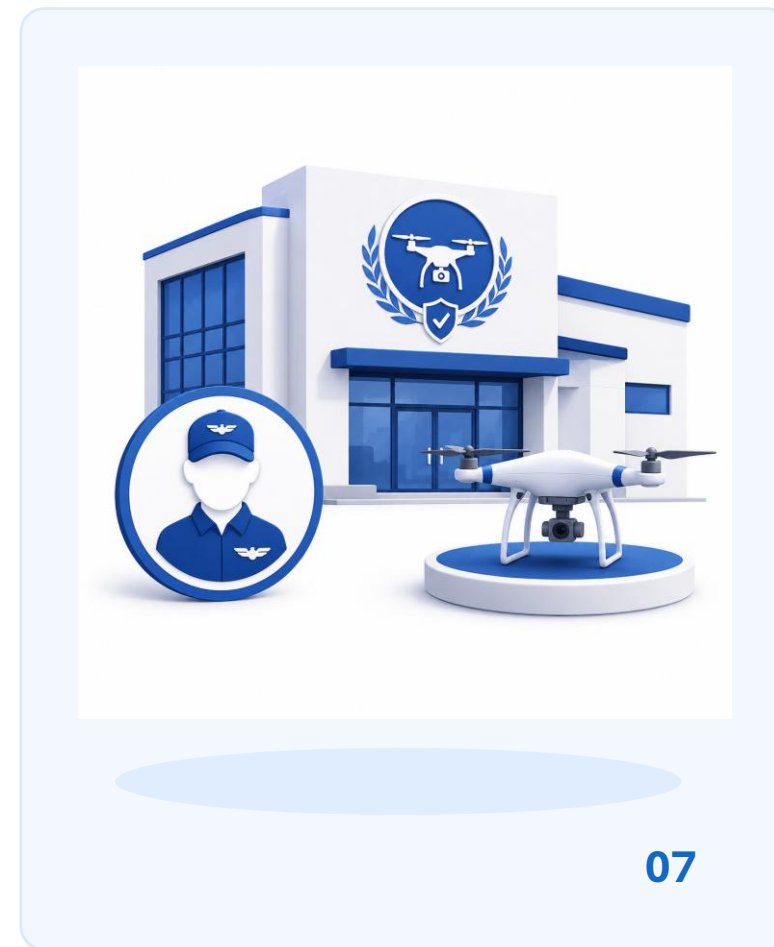
# Previsión 07

## Centros de instrucción, instructores y programas UAS CE-2)

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Establecer requisitos para la certificación o autorización de centros de instrucción UAS, aprobación de cursos específicos en CIAC, calificación de instructores, equipos de instrucción, registros y vigilancia.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



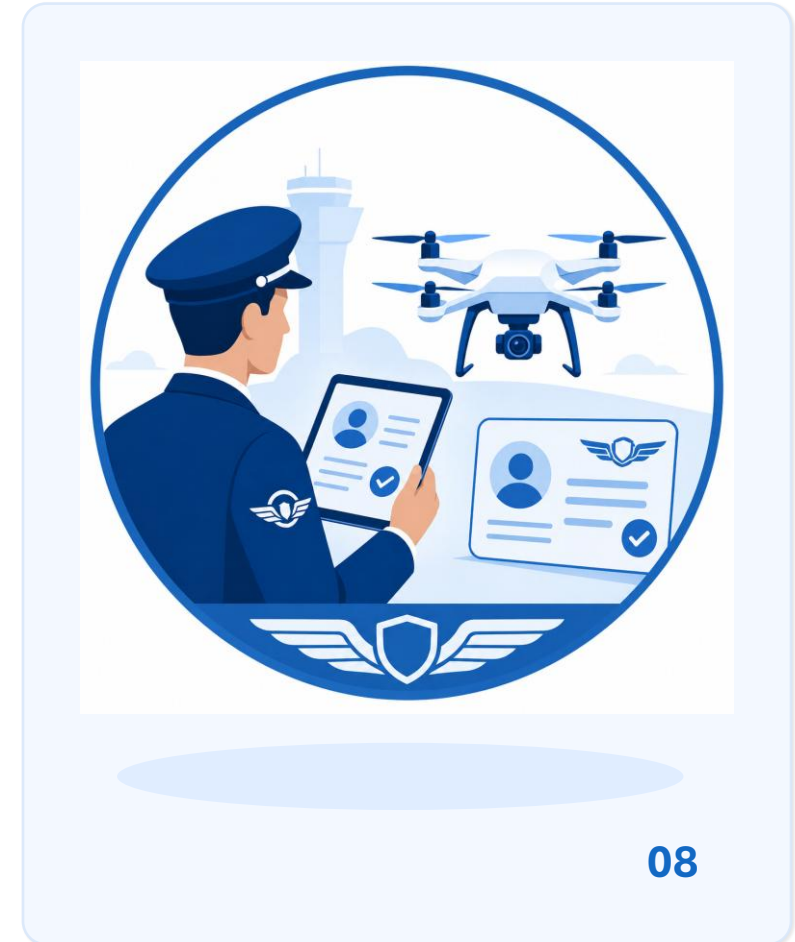
## Premisa 08

# Capacidad técnica de la AAC (CE-3/CE-4)

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Definir funciones, perfiles y calificación del personal técnico de la AAC responsable de procesos PEL-UAS, incluyendo certificación, aprobación, emisión de licencias/autorizaciones y vigilancia.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*

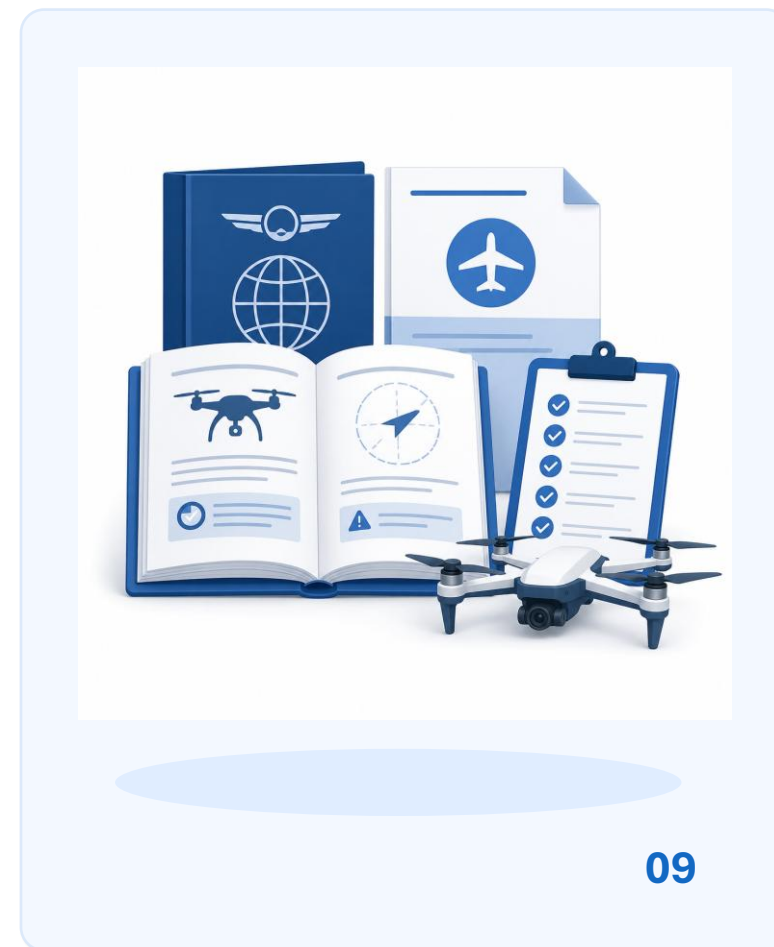


# Procedimientos administrativos y técnicos (CE-5)

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Desarrollar procedimientos para emisión de instrumentos PEL, aprobación de programas, certificación/autorización de centros, vigilancia continua, gestión de registros y solución de incumplimientos.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



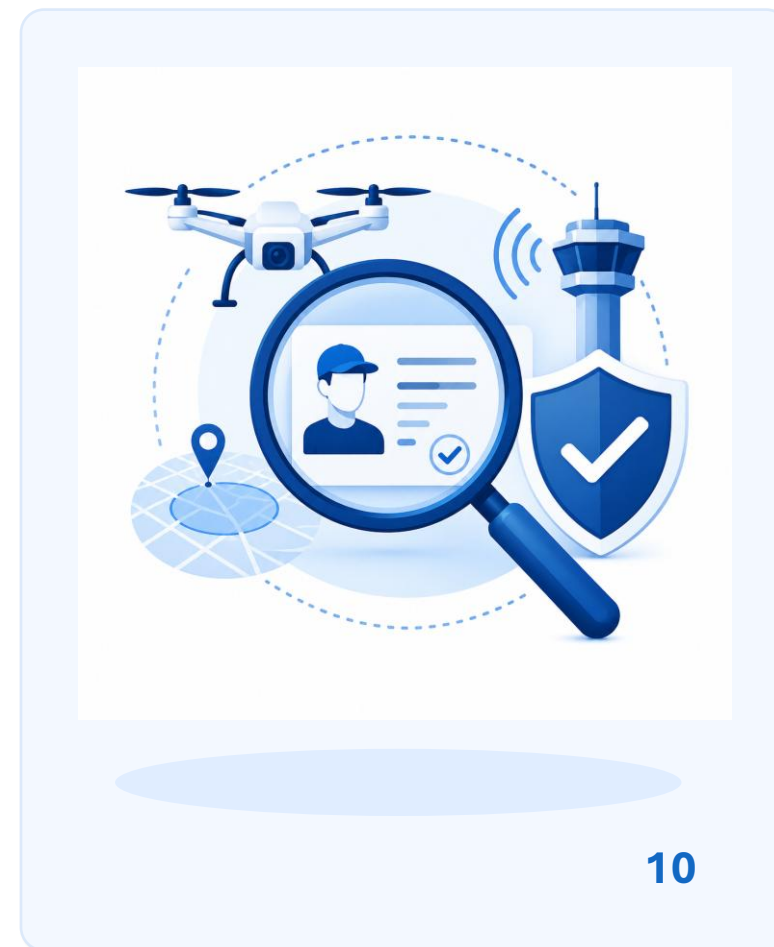
## Premisa 10

# Material guía para la industria y la AAC (CE-5)

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Elaborar circulares de asesoramiento, guías, formatos, listas de verificación y matrices de competencia para facilitar implementación armonizada.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



## Vigilancia y cumplimiento (CE-7/CE-8)

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Establecer criterios para vigilancia de pilotos, instructores, centros de instrucción y registros de competencia, incluyendo medidas correctivas y sancionatorias.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



# Coordinación interpaneles

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Asegurar coordinación con OPS, ANS, AIR y AGA para que las competencias PEL respondan al tipo de operación, características del UAS, espacio aéreo, infraestructura y condiciones de autorización.

*Enfoque: competencias proporcionales al riesgo y al escenario operacional.*



**APPENDIX D**

Regional Roadmap: UAS Specific Category (2026–2028)

— END —

## Regional Roadmap: Specific Category UAS (2026–2028)

### 1. Regulatory Development Phase (June 2026 – October 2027)

The main objective is to develop a harmonized regional regulatory framework based on operational risk, avoiding fragmentation among Member States.

- **Process Initiation (June 2026):** Launch of the comprehensive regulatory development process.
- **Technical Panel Work (June – October 2026):** The Operations (OPS), Airworthiness (AIR), Personnel Licensing (PEL), and Air Navigation Services (ANS) panels will develop the initial drafts based on the agreed technical premises.
- **Risk Analysis Methodology (June – October 2026):** Identification of the acceptable methodology or methodologies to be used regionally for the assessment of risks associated with standard scenarios.
- **Structure Validation (November 2026):** Presentation of the new LAR regulatory structure at an Extraordinary Focal Points Meeting to ensure alignment among States.
- **LAR UAS Consolidation (December 2026 – March 2027):** Refinement of the regulations to achieve a fully developed LAR regulation for the open and specific categories by March 2027.
- **Supporting Documentation and Scenarios (March – October 2027):**
  - Development of Inspector Manuals (MIO/MIA), Advisory Circulars (AC), and guidance material.
  - Where applicable, definition of “Regional Standard Scenarios” (photography, agricultural operations, urban delivery, etc.) to simplify authorization processes.

### 2. Training and Capacity-Building Strategy (2027–2028)

Effective implementation requires strengthening the technical capabilities of Civil Aviation Authorities (CAAs).

- **Regional SORA Course (March 2027):** Initial training on the Specific Operations Risk Assessment methodology.
- **LAR Course on Specific Category UAS (November 2027):** Will include instruction on the new regional regulations and On-the-Job Training (OJT) phases for the practical application of the regulation.
- **Continuity Programmes (2027–2028):** Preparation and delivery of advanced courses for inspectors and technical personnel from the States.

### 3. Integrated Technical Premises (Panel Inputs)

Technical Area	Key Premises for the Roadmap
Airworthiness (AIR)	Risk-proportionate requirements focus on the C2 Link, technical records, software update management, and flight manuals. <i>(See presentation)</i>
Personnel Licensing (PEL)	Focus on demonstrable competencies according to the operational scenario (VLOS, BVLOS) and medical fitness proportional to the level of risk. <i>(See presentation)</i>
Operations (OPS)	Use of “Sandboxes” to collect data and prioritization of standard scenarios to reduce the administrative burden. <i>(See item 3.16 of the report “Summary of Discussions”)</i>
Air Navigation Services (ANS)	Review of the UTM CONOPS, airspace management above 400 feet, and coordination with ATC services. <i>(See items 3.6 to 3.10 of the report “Summary of Discussions”)</i>
Aerodromes (AGA)	Analyze the requirements that may be affected by the operational use being given to these aircraft. <i>(See item 3.17 of the report “Summary of Discussions”)</i>
Cross-Panel Coordination	The development and implementation of these regulations require cross-functional coordination among all panels.

### 4. Review Milestones and Continuous Improvement

- **Publication of the New LAR Regulation on UAS (March 2027)**
- **First Regulatory Review (November 2027):**  
A comprehensive update will be carried out to incorporate ICAO developments and new provisions (Annexes and SARPs under development).

### Strategic Conclusion

The success of this roadmap will depend on cross-functional coordination among all technical areas. The critical need for States to allocate dedicated human and financial resources to manage the expected high volume of new operators is emphasized.