المنظمة العربية للطيران المدني
Arab Civil Aviation Organization

ورقة معلومات 3

الاجتماع التاسع والأربعون للجنة الملاحة الجوية

الرباط، المغرب، يومي 31 اكتوبر و1 نوفمبر 2023.

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البند الثالث: الأنشطة الفنية في ظل التعاون بين المنظمة وشركائها الخارجيين

ندوة الطائرات بدون طيار

(مقدمة من الإدارة العامة للمنظمة)

ملخص

تعرض هذه الورقة نبذة عن ندوة إقليمية مشتركة بين المنظمة العربية للطيران المدني والمؤتمر الأوروبي للطيران المدني واللجنة الإفريقية للطيران المدني وإدارة الأمن النقل الأمريكي حول الطائرات بدون طيار.

نظمت المنظمة العربية للطيران (ACAO)، والمؤتمر الأوروبي للطيران المدني (ECAC) واللجنة الافريقية للطيران المدني(AFCAC) وإدارة أمن النقل الأمريكي (TSA)، النسخة الأولى من الندوة الإقليمية حول الطائرات بدون طيار " Unmanned Aircraft Systems"، و ذلك بطنجة بالمملكة المغربية خلال يومي 4 و5 أكتوبر 2023.

حضر الندوة وأدارها 25 خبيرا دوليا، كما عرفت مشاركة 150 مسؤولا من أمن الطيران والملاحة الجوية والسلامة يمثلون 50 دولة عربية وإفريقية و8 منظمات دولية وإقليمية والصناعة.

وتمثلت الأهداف الرئيسية للندوة في مناقشة ومراجعة المواضيع ذات الصلة ب:

- *الإطار التنظيمي، والإجراءات الحالية بشأن أنظمة الطائرات بدون طيار.*
- *التهديدات والتحديات والمخاطر الحالية المرتبطة بعمليات الطائرات بدون طيار؛*
- *أحدث المنهجيات والطرق التي تسمح بتحديد وكشف وتحييد / التحكم في الطائرات بدون طيار التي تتطور في بيئة المطار؛*
- *ممارسات الصناعة وأنواع الطائرات بدون طيار والتكامل في الأجواء/وبيئة المطار ؛ و*
- *أحدث التطورات والحلول المبتكرة الحديثة في أنظمة الطائرات بدون طيار.*

تجدون بالمرفق وثيقة فنية عن مقتضيات ومخرجات هذه الندوة.

الإجراء المطلوب:

أ. إحاطة السادة الأعضاء علما بمقتضيات ومخرجات ندوة الطائرات بدون طيار التي عقدت بطنجة بالمملكة المغربية خلال يومي 4 و5 أكتوبر 2023.

Civil Aviation Security in Africa, the Middle East and Asia (CASE II)

An EU-funded and ECAC-implemented Project

Unmanned Aerial Systems WORKSHOP
Tangier, Morocco, 4-5 October 2023

04/10/2023 SUMMARY OF DAY 1

The first day of the workshop on Unmanned Aerial Systems (yesterday) started with an opening ceremony in which representatives from the organizing entities (TSA, AFCAC, ACAO, the EU and ECAC) shared their insights about the topic; highlighting aspects such as the benefits that this type of technology can bring but also the associated threats to its rapid development and spreading. It was also pointed out the need for a clear and defined regulatory framework, covering aspects like Identification, operations, detection and neutralization, training and awareness or limitations and restriction in their use.

After the opening, a high-level dialogue covered the issue of drones' integration in the existing aviation eco-system. the dialogue focussed on the current existing challenges from the regulatory point of view in terms of defining responsibilities and including the appropriate stakeholders in the discussion. ICAO presented its roadmap for promoting UAS integration, including inter-alia, dedicated training activities as well as the amendment of its annexes to incorporate provisions related with drones with the goal of establishing a global framework while at the same time providing room for the States to develop their own national regulations. The relevance of cooperation, information sharing, and capacity building initiatives was also mentioned. From AFCAC the integration of drones represents not only a business opportunity but also a way to facilitate the development of remote communities, is therefore considered a priority. ACAO, highlighted the importance given to the UAS activities, illustrated by the resources allocated to the relevant capacity building program as well as the dedicated Task force established to support its member State in the UAS integration.

Three sessions were covered during the rest of the day. The first one which topic was regulatory framework, allowed speakers from EASA, the FAA, Jordan and Singapore to share their experiences in establishing regulations related to UAS. The categorisation of drones and more specifically the operations involving drones was shown as a common step taken by all of them. The need for defining this category based on a risk assessment approach and to adjust the requirements in accordance was also stated. Those requirements may include airworthiness, operations, permits and authorizations, licensing, UAS registration, privacy concerns and training and awareness.

The session number II about threats, challenges and risks included the participation of experts from Senegal, the Netherlands, France and Kenya. Experiences and challenges dealing with drones' operations from the regulatory point of view were shared by the representatives of Kenya and Senegal including flights over airports or restrictions to import UAS. The concept of dark drones as unauthorised drones and the threat associated to them was also presented. The lack of international air criminal law conventionsapplicable to this technology was shared as a review of the applicability of the existing ICAO conventions and protocols related to Unmanned aircraft.

The day finalised with the session III about detection and neutralization policies. For this session the workshop counted with the knowledge shared by representatives from Kuwait, the Netherlands and Saudi Arabia. From Kuwait it was shared their approach regarding the constitution of a national committee responsible for assuring the security associated to the UAS usage within its territory. A similar scheme was presented by the Netherlands on the establishment of meetings and a working group for unwanted drone activities. Part of the initiatives that this group is promoting are directed to assure detection and neutralization of this unwanted operations by applying sensing and counter measuring technology in a coordinated way. Lastly, the representative of Saudi Arabia commented on the solutions

defined by his authority in terms of registration and authorization of UAS and operators and the allocations of defined free fly zones.

05/10/2023 SUMMARY OF DAY 2

The second day of the workshop started with a quick recap by the CASE II Project Manager on what it was shared during the previous day.

Just after this starting point, the seminar continued with session IV about types of drones and their integration in airspaces and into aerodromes. The session counted with the participation of representatives from the authorities of Rwanda and Ghana as well as from EASA and the perspective of Eurocontrol via recorded video. The intervention of Ms. Melissa Rusanganwa on the approach taken by the Rwanda Civil aviation authority going from banning drones to promote its use was appreciated and well applauded. She commented in relation to the topic of the session they journey from radio communications between the drone operator and the ATM service provider to the use of a software that provides constant location and monitoring capability. The representative from the Ghanaian Authority commented on their experiences and the need for pushing pour boundaries when it comes to embrace the use of this new technologies. The video format intervention from Andrew Hatley, from Eurocontrol, introduced the SORA methodology for using predefined risks assessment to specific drone operations. EASA showed its categorization of drones as open, specific and certified drones and presented the concept of U-Space airspace for defining geographical zones for the use of UAS. During the round of questions and answers, participants could solve their doubts about issues such as how to track the use of unregistered drones or the ground risk.

The session V covered the topic of latest developments and innovative solutions giving the opportunity for the industry to display their latest advances in the use of drones. Mr Edurado Faro representing the company *Tediris M Drones* presented their solutions for airport operations with drones, including its use for ILS/VOR inspection, obstacle control, FOD identification, or perimeter surveillance and their command-and-control software *Genetic.* EASA shared their research and innovation program which includes solutions for supporting manufacturers in their application for UAS certification and an investigation project about the consequences of drone strike for bigger aircraft. The result of this project will be presented the 25/10/2023 in Cologne. The final speaker of this session was Mr Badr Idrissi from Atlan Space which introduced their solution for operations beyond visual line of sight (BVLOS) using artificial intelligence to control the drone even in areas without communication coverage.

Due to shortage in timing, the session VI which was going to be a debate about the challenges and opportunities regarding the drone integration in the aviation eco-system had to be cancelled. The session VII about capacity building and regional cooperation was carried out as expected as panel with representatives from ECAC, AFCAC and ACAO. All three organizations presented their initiatives to foster capacity building among their member states. ECAC shared about the CASE II Project as the mean to channel the knowledge and expertise to those states with the need, including the organization of workshops like the one reported here. In relation to the topic of drones, the CASE II project is as well developing a training course about emerging threats that will include those related UAS.

During the closing ceremony a rub-up has been provided summarising the presentations made, while the following take home message was underlined : "the State representatives are invited to brief their governance body on the importance of proactive integration of the UAS through the establishment of a flexible regulatory framework and relevant eco-system".

Outcomes & Recommendations

Considering the recent development of UAS regulatory framework, system, technologies, utilization scenarios, shared by the different speakers from authorities, agencies, organisations and industries, the WS convened on the followings recommendations:

High Level Dialogue – Stepping up commitment for promoting Drones integration as a new entrant in aviation eco-system

- **Policy Commitments:** Participants could commit to developing and implementing supportive policies and regulations for drone integration within their respective regions or countries.
- **Collaborative Framework:** Establish a collaborative framework or working group to facilitate cross-border cooperation on drone integration challenges and opportunities.
- **Investment Pledges:** Encourage stakeholders to pledge investments in research, development, and infrastructure for the safe and efficient integration of drones into the aviation ecosystem.
- **Safety Standards:** Commit to the development and adoption of international safety standards and best practices for drone operations within aviation.
- **Education and Awareness:** Agree to support educational initiatives and public awareness campaigns to enhance understanding and acceptance of drones in aviation.
- **Data Sharing:** Promote data sharing and collaboration among industry players to improve drone traffic management and airspace integration.
- **Market Growth:** Set targets for the growth of the drone industry, including market size, job creation, and economic impact, within a specified time frame.
- **Environmental Impact:** Discuss and commit to measures that mitigate the environmental impact of drone operations, such as emissions reduction and noise control.
- **Public-Private Partnerships:** Encourage public-private partnerships to drive innovation and accelerate the development of drone technologies and services.
- **Regulatory Harmonization:** Work towards harmonizing regulations and standards at the regional and international levels to facilitate seamless drone integration across borders.

Session I: Regulatory Framework:

- **Comparison of Existing Approaches:** Participants can gain a comprehensive understanding of various existing approaches to drone regulations across different regions and countries.
- **Best Practices Identification:** Identify and highlight best practices in drone regulatory frameworks from different parts of the world.

- **Harmonization Efforts:** Discuss the progress and challenges in harmonizing drone regulations globally or within specific regions to enable smoother cross-border operations.
- **Risk-Based Regulation:** Explore the concept of risk-based regulations for drones, where rules are tailored to the level of risk associated with different operations.
- **Public Safety Assurance:** Discuss strategies and standards for ensuring public safety in drone operations, including aspects such as geofencing, remote identification, and no-fly zones.
- **Innovation and Flexibility:** Explore how regulatory frameworks can balance the need for innovation in the drone industry while ensuring safety and security.
- **Compliance and Enforcement:** Address challenges related to compliance monitoring and enforcement of drone regulations.
- **Privacy and Data Protection:** Examine the privacy and data protection aspects of drone operations and regulations.
- **Industry Engagement:** Highlight the importance of engaging stakeholders from the drone industry, including manufacturers and operators, in the regulatory process.
- **International Collaboration:** Discuss the benefits of international collaboration in shaping effective and consistent drone regulations.
- **Adaptive Regulation:** Explore the concept of adaptive regulation that can evolve with advancements in drone technology and changing operational needs.

Session II: Threats, Challenges and Risks

- **Risk Assessment:** Develop a common understanding of the risks associated with drone operations, including factors like airspace congestion, collisions, and security threats.
- **Identification of Threat Vectors:** Identify potential threat vectors and vulnerabilities in the use of drones, both in the civilian and security contexts.
- **Countermeasures:** Discuss and propose effective countermeasures to mitigate the identified threats, such as anti-drone technology, regulatory measures, and security protocols.
- **Data Security:** Explore data security concerns related to drone operations, including the protection of sensitive information collected during flights.
- **Privacy Protection:** Discuss strategies and regulations for protecting individuals' privacy from intrusive drone activities.
- **Safety Measures:** Highlight safety measures that can be implemented to prevent accidents and incidents, including collision avoidance systems and safety training.
- **Cybersecurity:** Address cybersecurity risks associated with drones, including the potential for hacking and data breaches.
- **Geopolitical Risks:** Examine the geopolitical implications and risks associated with drone technology, including the potential for misuse in conflicts.

- **Environmental Impact:** Discuss the environmental impact of drone operations, including noise pollution and emissions, and consider measures for minimizing these effects.
- **Public Perception:** Consider strategies for improving public perception and trust in drone technology by addressing concerns and risks transparently.
- **International Cooperation:** Highlight the importance of international cooperation in addressing global threats and risks related to drones.
- **Research and Innovation:** Encourage research and innovation in developing technologies and strategies to mitigate risks associated with drones.

Session III: Detection & Neutralization policies

- **Methodology Overview:** Provide an overview of the latest methodologies and technologies used for the identification, detection, and neutralization of RPAS operating in specific environments or areas.
- **Policy Frameworks:** Discuss existing and emerging policy frameworks related to the use of detection and neutralization technologies for RPAS, emphasizing the need for regulatory guidance.
- **Technological Advancements:** Highlight recent technological advancements in RPAS detection, including radar systems, radio frequency (RF) detection, acoustic sensors, and optical solutions.
- **Interoperability:** Promote discussions on the importance of interoperability among different detection and neutralization technologies to ensure seamless operations.
- **Legal and Ethical Considerations:** Address legal and ethical considerations surrounding the identification, detection, and neutralization of RPAS, including privacy, data protection, and human rights.
- **Testing and Validation:** Discuss methods for testing and validating detection and neutralization solutions to ensure their reliability and effectiveness.
- **Collaboration:** Encourage collaboration between industry stakeholders, government agencies, and research institutions to develop and implement detection and neutralization solutions.
- **Integration with Existing Infrastructure:** Explore how these technologies can be integrated into existing aviation and security infrastructure to enhance overall safety and security.
- **Response Protocols:** Develop guidelines and protocols for responding to identified threats, including communication with relevant authorities and law enforcement agencies.
- **Education and Training:** Emphasize the importance of education and training for personnel responsible for using detection and neutralization technologies effectively and ethically.

- **Research and Development:** Promote research and development efforts aimed at improving the accuracy and reliability of detection and neutralization systems.
- **International Collaboration:** Highlight the benefits of international collaboration in addressing cross-border challenges related to RPAS detection and neutralization.

Session IV: Types of Drones and Integration in airspaces and into aerodromes Environments/Activities

- **Airspace Management:** Redesign Airspace according to users needs regardless of its nature military, civilian, maned or unmanned aircraft. Therefore, a new approach / CONOPS considering all these needs would support getting the objective which is to have a effective, resilient, flexible airspace for all users and covering efficiently all needs.
- **Wider Management of UAS**: Call for a wider Management of the UAS at National level, considering its multi-sectorial nature including especially the instauration of national committee composed of civilian, military and Minister of interior representatives.
- **Less costly solution:** Consider the developed solutions based on the use of UAS calling regulatory bodies for quick and reactive processes as means of certification to accelerate their integration in the market. (like ILS/VOR Calibration/inspection, obstacle control, FOD identification, or perimeter surveillance, …etc)
- **Operation centric, risk-based, performance based:** Consider the EU initiatives-based SORA methodology for using predefined and qualitative safety assessment to mitigate the risk of an encounter of a single drone with a manned aircraft.
- **Holistic risk assessment:** Robust containment can be the basis of a Pre-defined Risk Assessment (PDRA), allowing simultaneous UAS operation.
- **Comprehensive safety assessment**: Safety assessment should be based on target level of safety, considering Normal operations, Abnormal operations, fault conditions.

Session V: Latest developments and Innovative Solutions

- **Open minded approach:** The CAA, regulators and relevant States authorities to adopt a flexible, positive and a forward-looking approach in order to assist the start up in their goals to transform Ideas in actions and valuable Projects.
- **Outcome based Regulations:** Rather than prescriptive regulations the UAS Industry needs performance-based regulation for more integration and rapid adaptation to the UAS eco-system.
- **Comprehensive strategy:** Consider EU new Drone strategy which has been designed to accelerate drone technology development while ensuring safety and efficacy. Key aspects of this strategy include safety, sustainable practices, and data-sharing initiatives to ensure successful implementation across Europe.

- **Research and Innovation**: Consider the EU R&I strategy, comprehensive approach for accelerating market deployment of new technologies, enabling new concepts of operations, providing agile and effective regulatory system, as well as advancing safety, security and environmental impact assessments.
- **Innovation calling another**: Consider Merging AI(Artificial Intelligence) and UAS technology which might be very promising for the future. These solutions would be carefully based on multilayer risk management, but fore sure should be encouraged. (AI allowing Autonomous navigation, cognitive sensing and contextual behavior).
- **Wider Management of UAS**: Call for a wider Management of the UAS at National level, considering its multi-sectorial nature including especially the instauration of national committee composed of civilian, military and Minister of interior representatives.

Session VII: Capacity Building and regional Cooperation (Panel)

- **CASE II Project:** Highlight the benefits of this project aiming to promote capacity building in relation with aviation security in Africa, Middle East and Asia, through facilitation and sharing the expertise and good practices.
- **Sharing experiences and best practices**: This should either allow for accelerating the effective integration of UAS operation and fostering the harmonization of regulations processes and procedures making cross border UAS operation more viable and sustainable.
- **Capacity building**: encouraging ACAO, AFCAC & ECAC to continue their cooperation to foster capacity building among their member states.