



ICAO

International Civil Aviation Organization**Twenty Ninth Meeting of the Communications/
Navigation and Surveillance Sub-group (CNS SG/29)
of APANPIRG**

Bangkok, Thailand, 16-20 June 2025

Agenda Item 13: Cybersecurity of CNS/ATM systems

13.1 Updates on ICAO International Aviation Trust Framework

**NEED FOR THE CREATION OF AN APAC CONTRIBUTORY BODY FOR THE
MANAGEMENT AND IMPLEMENTATION OF ICAO ANS
CYBERSECURITY PROVISIONS**

(Presented by CRV OG and SWIM TF)

SUMMARY

This paper presents recommendations for the creation of a new APAC contributory body for the management and implementation of cybersecurity provisions. The recommendation is resulted from detailed discussion and deliberation held in first Working Session of the SWIM Implementation Pioneer Ad-Hoc Group (SIPG WS/1) held from 14 to 17 January 2025, the Thirteenth Meetings of Common aeRonautical VPN Operations Group (CRV OG/13) held from 5-8 March 2025, the Twelfth Meeting of the Aeronautical Communication Services (ACS) Implementation Coordination Group (ACSICG/12) held from 25 to 28 March 2025, the Second Working Session of the SWIM Implementation Pioneer Ad-Hoc Group (SIPG WS/2) held from 26 to 30 May 2025, and the Tenth Meeting of the System Wide Information Management Task Force (SWIM TF/10) was held from 20 – 23 May 2025.

1. INTRODUCTION

1.1 The Procedures for Air Navigation Services - Information Management (PANS-IM, Doc 10199) maintains that stakeholders processing, storing, consuming or transferring information shall implement an information security framework. This framework is designed to ensure the confidentiality, integrity and availability of the information and information services. It refers to the information security framework applying to the IPS-based network, the technical infrastructure, the information, the information service and the applications that process, use or distribute information.

1.2 To address these challenges, ICAO has established the Cybersecurity Panel (CYSECP) and the Trust Framework Panel (TFP) to ensure both the communication security necessary for information sharing and the information security required for global collaborative operations. These panels are engaged in the process of developing a common set of principles, policies, guidance, and a transition strategy for a globally harmonized framework.

1.3 The Thirteenth Meetings of Common aeRonautical VPN Operations Group (CRV OG/13) held in Wellington, New Zealand, on 5-8 March 2025, discussed the requirement to implement cybersecurity provisions arising from the Trust Framework Panel and Communication Panel.

1.4 The focus of the discussion was how to oversee the implementation of provisions mentioned in various documents such as the Manual of the Public Key Infrastructure (PKI) Policy for Aeronautical Communications (Doc 10095), EPL Technical Specifications for Implementation and Verification (Doc 10190), Aviation Common Certificate Policy (Doc 10169), Manual on Aviation Information Security (Doc 10204) or Manual on Trust Frameworks.

1.5 As a critical technical infrastructure for regional and global aviation information exchange, it is essential that SWIM-based information exchange in both ground-to-ground (G/G) and air-to-ground (A/G) communications fully interoperates with the information security framework to ensure the safety of flight operations. The tenth Meeting of the System Wide Information Management Task Force (SWIM TF/10) held from 20 – 23 May 2025 discussed the requirements for implementing the aviation information security framework over SWIM and the need to identify the responsible entities for its implementation in the APAC region.

1.6 A similar discussion was held in the first Working Session of the SWIM Implementation Pioneer Ad-Hoc Group (SIPG WS/1) held from 14 to 17 January 2025, the Twelfth Meeting of the Aeronautical Communication Services (ACS) Implementation Coordination Group (ACSICG/12) held from 25 to 28 March 2025, and the Second Working Session of the SWIM Implementation Pioneer Ad-Hoc Group (SIPG WS/2) held from 26 to 30 May 2025, all held at the ICAO APAC Regional Office, Bangkok, Thailand.

1.7 This paper summarized the recommendations made by all five meetings for CNS SG/29 consideration.

2. DISCUSSION

2.1. The Aviation System is becoming more interconnected, and the Internet Protocol (IP) used by the systems supporting aviation and the interconnectivity between systems and States require a higher level of protection and security than the legacy protocols of analog and RS232 provided.

2.2. At present, each State/Administration is responsible for the security of the systems and connections they are responsible for. This is clearly stated in the Manual on Aviation Information Security (Doc 10204).

2.3. PKI is a collection of processes, technologies and access control policies that organizations use to provide end-users with credentials, permitting them to perform various operations such as authentication. Digital certificates are a means to digitally identify an entity within an information system. They can be used to authenticate a user or a non-person entity (NPE) and to encrypt communications between users and information systems.

2.4. When applied across an organization, PKI certificates can be used to establish the identity of people, devices, and services, enabling controlled access to information systems, data protection, and transaction accountability. Using PKI as an identity source for authentication can provide a high level of assurance that identities accessing the information system correspond to the certificates issued. This ensures that only legitimate users have access to information and information services.

2.5. When developing a PKI policy and implementation strategy, several categories should be considered to establish a robust PKI capability. The categories include capabilities, processes, and entities that are responsible for implementing an interoperable PKI framework across multiple aviation stakeholders.

2.6. However, the requirement for certificate-based authentication as per Aviation Common Certificate Policy (Doc 10169) and PKI as per Manual of the Public Key Infrastructure (PKI) Policy for Aeronautical Communications (Doc 10095) requires a regional approach and not a State or current ICAO Group or Project approach.

2.7. The use of Certificates and PKI requires management, processes and procedures that can be consumed by each State/Administration, ICAO Group and ICAO Project within the APAC region. This provides consistency in the application of these infrastructures across the region rather than each state, ICAO Group, or Project trying to provide its own method of implementation.

2.8. Although, to protect the safety of flight operations from cyber threats and ensure business continuity, the Manual on Aviation Information Security (MAIS, Doc 10204) was published by the ICAO TFP, to implement the aviation information security framework, the Aviation Common Certificate Policy (ACCP, Doc 10169) for trusted identity management and the Manual on Trust Framework Implementation for different trust framework instances are being drafted by TFP working groups. Therefore, as a critical technical infrastructure for regional and global aviation information exchange, the requirements of SWIM to support the implementation of an appropriate trust framework instance should be clearly defined.

2.9. The question then becomes which ICAO group should manage this. The CRV OG's focus is on the delivery of stable and reliable network connectivity across the APAC Region, onboarding users, and running an RFI process for a new contract. The SWIM TF is very focused on the creation and delivery of SWIM but requires the use of PKI and Certificates for secure communications and is looking for guidance and management of this infrastructure. It is to be noted that SWIM and CRV are two of the several use cases for several ANS infrastructures that would utilize PKI implementation.

2.10. As PKI-based approaches impact all communications in aviation, it is critical to ensure seamless integration with SWIM-enabled systems, ATC networks, and airborne systems. The issuance and management of digital certificates for SWIM entities (ATM Service Providers, Airspace Users, Information Services, and relevant devices) are essential to securing SWIM-based operations. Additionally, the use of digital signatures for cross-border and multi-regional SWIM message exchanges strengthens data integrity and communication trust.

2.11. Therefore, it is necessary to establish a working group or task force to explore the development of a regional federated PKI architecture that ensures secure interoperability across multiple states and regions. Additionally, a technical community is needed to support the implementation of Trust Framework Instances for various applications. Collaboration with the SWIM TF is also essential to support the implementation of a Trust Framework Instance for SWIM, enabling secure, interoperable, and resilient aviation information exchange and flight operations

2.12. It is agreed by ACSICG, CRV OG and SWIM TF meetings held in 2025 that there is a need for a dedicated contributory body to implement cybersecurity provisions arising from the ICAO documents on cybersecurity for the region that is made up of people experienced in the management of such infrastructure. Therefore, the following Draft Conclusion is being proposed by CRV OG and SWIM TF, jointly, for adoption by the CNS SG/29 Meeting:

Draft Conclusion CNS SG/29/XX - Creation of an APAC contributory body for the management and implementation of cybersecurity provisions.

What: To ensure consistent implementation of the requirements of cybersecurity from the various ICAO manuals in the APAC region, especially Certificates and PKI, a contributory body is created to	Expected impact: ☐ Political / Global ☐ Inter-regional ☒ Economic
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manage this using people experienced in the management and provisioning of such services.		☐ Environmental ☒ Ops/Technical
Why: To provide consistent application of the requirements.	Follow-up:	☒ Required from States
When: 20-Jun-25	Status:	Draft to be adopted by Subgroup
Who: ☒ Sub groups ☒ APAC States ☒ ICAO APAC RO ☐ ICAO HQ ☒ Other: ACSICG, CRV OG, SWIM TF		

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) adopt the proposed draft conclusion; and
- c) discuss any relevant matter as appropriate
