



SAFE SKIES.
**SUSTAINABLE
FUTURE.**



| ICAO



Day 1

Welcome Remarks

Lieutenant General Carlos Antonio Fernández Onofre

Minister of Defense, Dominican Republic

CESAC Director

Brigadier General Pilot Enmanuel Marcelino Souffront Tamayo

FARD, CESAC General Director, Dominican Republic

Mr. Jose María Peral Pecharromán, Regional Officer

AVSEC/FAL, ICAO NACC

CESAC - OACI

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Ces@c2025

Interpretations:

Spanish: Channel 1
English: Channel 3

Session 1

Regulatory Framework and Legal Instruments

Eng. Carlos Leonardoa

Director of the Cyber Incident Response Team of the Dominican Republic,
National Cybersecurity Center, Dominican Republic

Mr. Philippe Morio

Cybersecurity Expert, ICAO

Ms. Diana Raquel Gómez Cuenca

Agente Fiscal de la Unidad
Especializada en Delitos
Informáticos, Paraguay

Mr. Daniel Melendez

CEO E-Best Choice SAS, Colombia



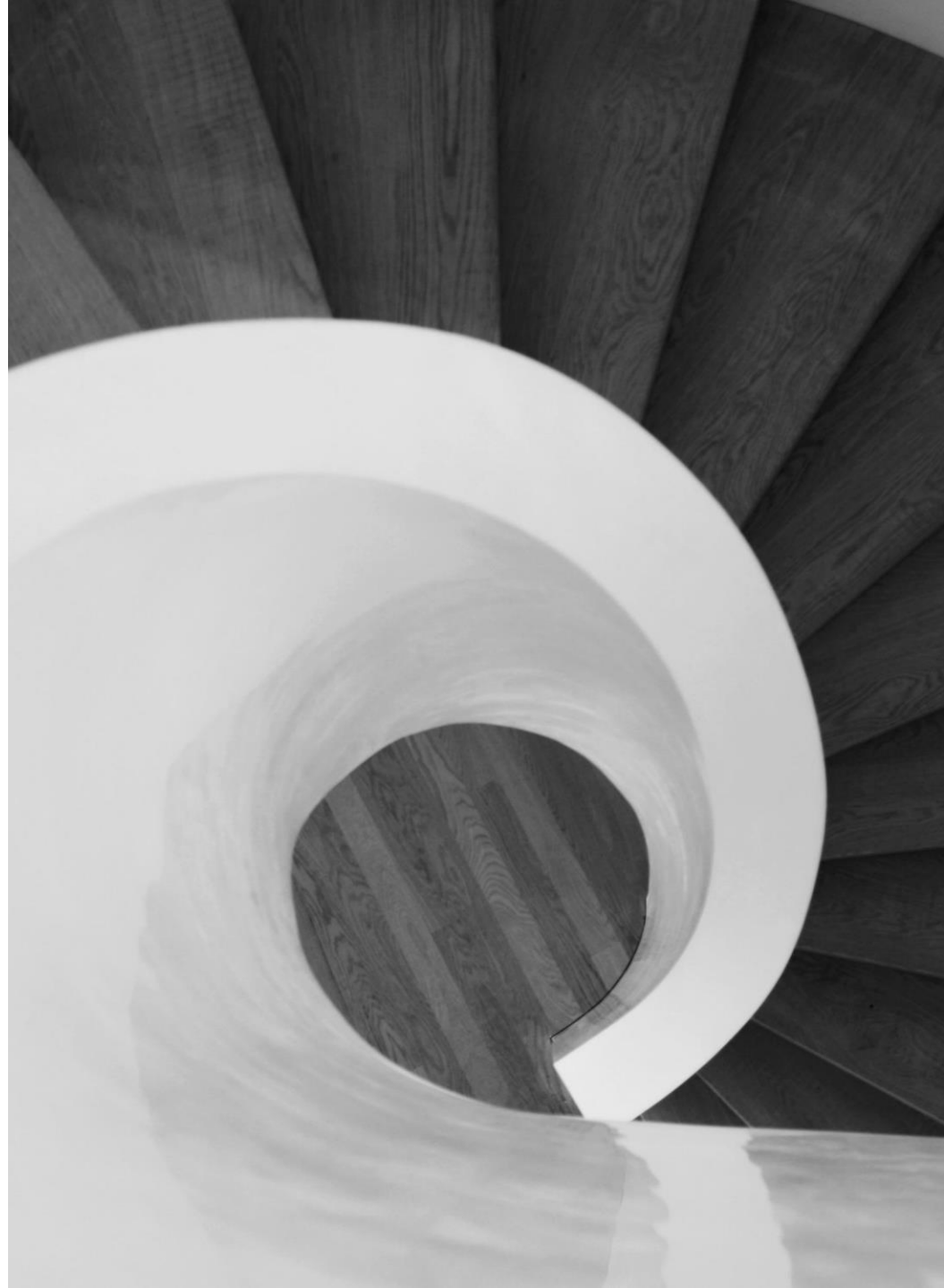
ICAO Policy Work and Regulatory Framework - Aviation Cybersecurity

Philippe MORIO

Cybersecurity Expert
International Civil Aviation Organization (ICAO)

CONTENTS

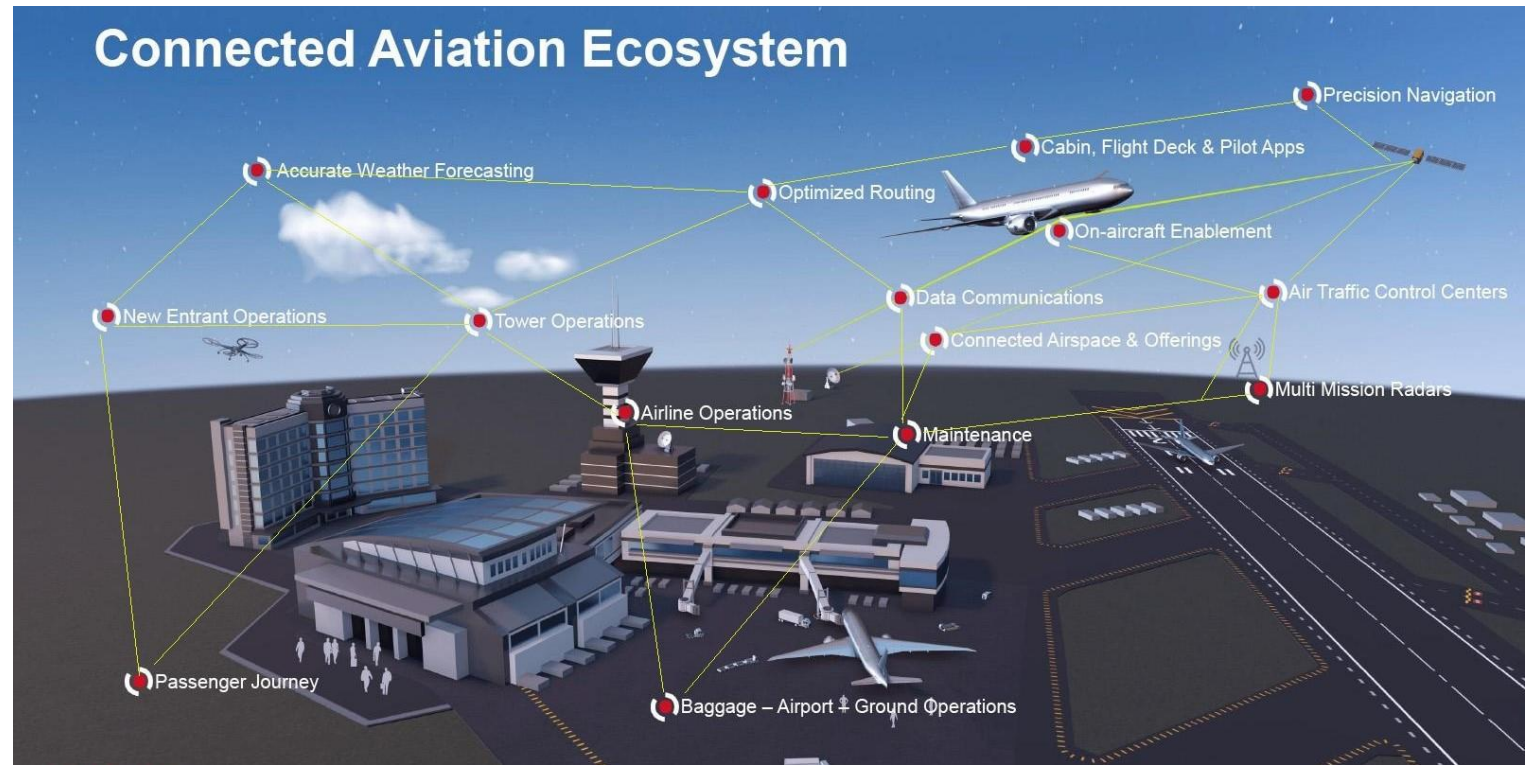
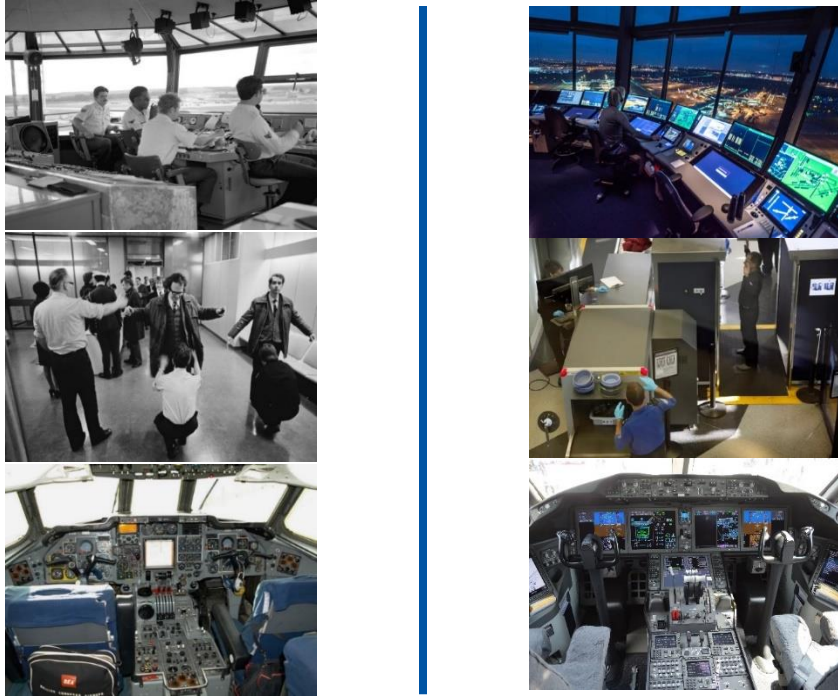
- Understanding Cybersecurity in Civil Aviation and the role of ICAO
- ICAO Milestones in Cybersecurity
- ICAO Standard & Recommended Practice on Aviation Cybersecurity
- ICAO Assembly Resolutions on Aviation Cybersecurity
- The Aviation Cybersecurity Strategy and Action Plan
- Aviation Cybersecurity Guidance Material
- ICAO Training & Capacity Building Initiatives



Why Cybersecurity in Civil Aviation?

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Impact of Technology



ICAO
Technology facilitates growth of air transport while enhancing its safety, security, efficiency, capacity, and sustainability.

However,
Inter-connection and digitalization of the systems between aviation stakeholders increases the surface of attack of the aviation ecosystem.

Understanding Aviation Cybersecurity

Cross-Sectoral



“The process of protecting information by **preventing, detecting, and responding to attacks**”



“The **preservation of confidentiality, integrity and availability** of information in the cyberspace”

Aviation



*The body of technologies, controls and measures, processes, procedures and practices designed to **ensure confidentiality, integrity, availability, and overall protection and resilience of cyber assets** from attack, damage, destruction, disruption, unauthorized access, and/or exploitation*

ICAO's work in the aviation cybersecurity field is comprehensive and complex

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Resolution A40-10:
*Addressing
Cybersecurity in
Civil Aviation*,
adopted the
Aviation
Cybersecurity
Strategy

Raising awareness

- on the importance of addressing cybersecurity

Developing

- Standards and Recommended Practices (SARPs)
- Procedures for Air Navigation Services (PANS)
- Aviation cybersecurity capacity building and implementation support

Supporting

- aviation cybersecurity discussions

Ensuring

- the international air law framework

Milestones of ICAO's Work on Aviation Cybersecurity

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2005

Global Operational ATM
concept

2014

IHLG - Civil Aviation
Cybersecurity Action Plan
1st SARP in Annex 17

2016

A39-19

2017

Secretariat Study Group on
Cybersecurity

2019

Aviation Cybersecurity
Strategy – A 40-10
Trust Framework Study Group

Major Milestones

2020

Cybersecurity Action Plan –
1st Edition

2022

Cybersecurity Action Plan -2nd Edition

A 41-19: Establishment of:

- the Ad Hoc Cybersecurity Coordination Committee (AHCCC)
- Cybersecurity Panel (CYSECP)
- Trust Framework Panel (TFP)

ICAO Standard & Recommended Practice on Cybersecurity

Annex 17 to the Chicago Convention – *Aviation Security*

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- **Standard 4.9.1**

Each Contracting State shall ensure that operators or entities as defined in the national civil aviation security programme or other relevant national documentation **identify** their critical information and communications technology systems and data used for civil aviation purposes and, **in accordance with a risk assessment, develop and implement**, as appropriate, measures to protect them from unlawful interference

ICAO

- **Recommended Practice 4.9.2**



ICAO Assembly Resolutions on Aviation Cybersecurity

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A41-19: Addressing Cybersecurity in Civil Aviation

Global Adoption



Beijing Instruments

Cooperation



National, Regional and Global
States and Industry

Implementation



ICAO Strategy and Action Plan

Governance



Define Responsibilities, Identify
Competent Authority...

Others



Risk management framework,
cybersecurity culture ...

PROVISIONAL EDITION
OCTOBER 2022

RESOLUTIONS
ADOPTED BY THE ASSEMBLY



ASSEMBLY – 41st SESSION
Montréal, 27 September–7 October 2022

INTERNATIONAL CIVIL AVIATION ORGANIZATION

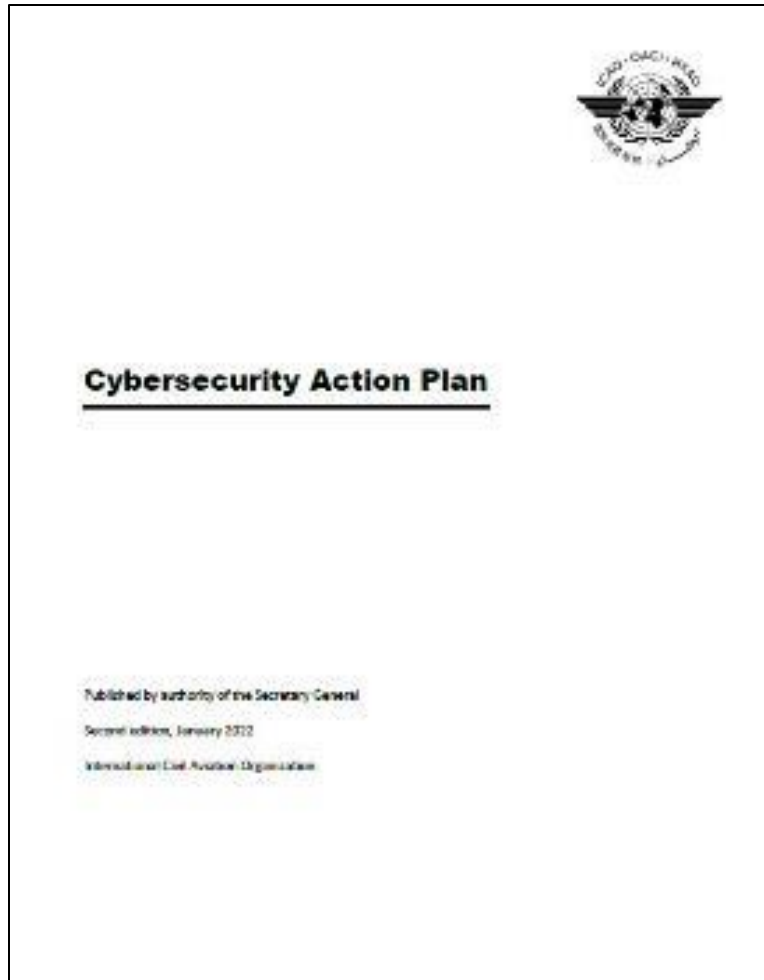


The 7 Pillars of the ICAO Cybersecurity Strategy

- International Cooperation
- Governance
- Effective Legislation and Regulation
- Cybersecurity Policy
- Information Sharing
- Incident Management & Emergency Planning
- Capacity Building, Training and Cybersecurity Culture

Cybersecurity Action Plan

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First Edition
published in
November 2020



Second Edition published
in January 2022



Available on ICAO
Public Website



Provides the Foundation for
ICAO, States and
stakeholders to work
together

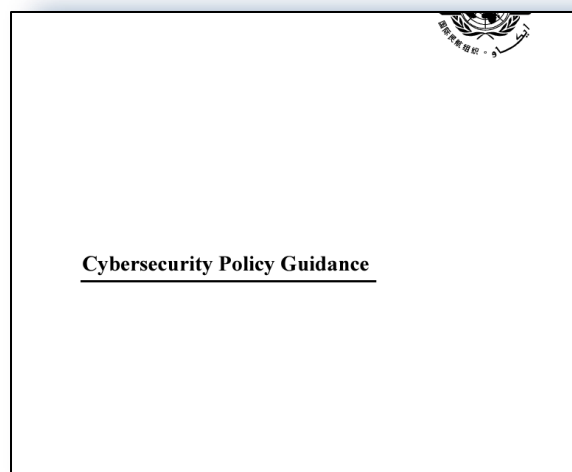


Develops the **7 Pillars** of the Aviation
Cybersecurity Strategy into **32 Priority Actions**,
which are further broken down into **51 Tasks** to be
implemented by **ICAO, States, and Stakeholders**

Cybersecurity Action Plan (Example)

Action #	By	Specific Measures/Tasks	Indicators	Priority	Start Date of Implementation
CyAP 0.1	ICAO, Member States, and Industry	ICAO to develop a model Cybersecurity Policy for reference by Member States and Industry when developing their own national/organizational policies.	The model is available to Member States and Industry.	High	2021
CyAP 2.1	ICAO and Member States	Establish a governance structure in the civil aviation cybersecurity field.	Identification of adequate governance structure(s) for civil aviation cybersecurity.	N/A	2021-2023
CyAP3.1	Member States	Member States to ratify Beijing instruments.	Number of States having ratified the Beijing instruments.	High	Ongoing
CyAP 2.5	ICAO	ICAO to include cybersecurity in regional and global plans to ensure the safety, security, and resilience of aviation.	Updated Plans published.	N/A	2022-2023
CyAP 6.1	Member States, and Industry	Member States to establish targets and minimum levels of functionalities essential to the civil aviation sector. Industry to apply the targets developed.	Publish a list of targets and minimum acceptable levels of functionalities for aviation continuity.	High	2022 - 2023

Aviation Cybersecurity Guidance Material



- <https://www.icao.int/aviationcybersecurity/Pages/Guidance-material.aspx>



"WE COULDN'T HIRE THE CYBERSECURITY CANDIDATE YOU SENT US, HE WAS SAYING TOO MANY SCARY THINGS ABOUT OUR COMPUTERS,"



Doc 10213 — Restricted

Global Cyber Risk Considerations

(FIRST EDITION, 2025)

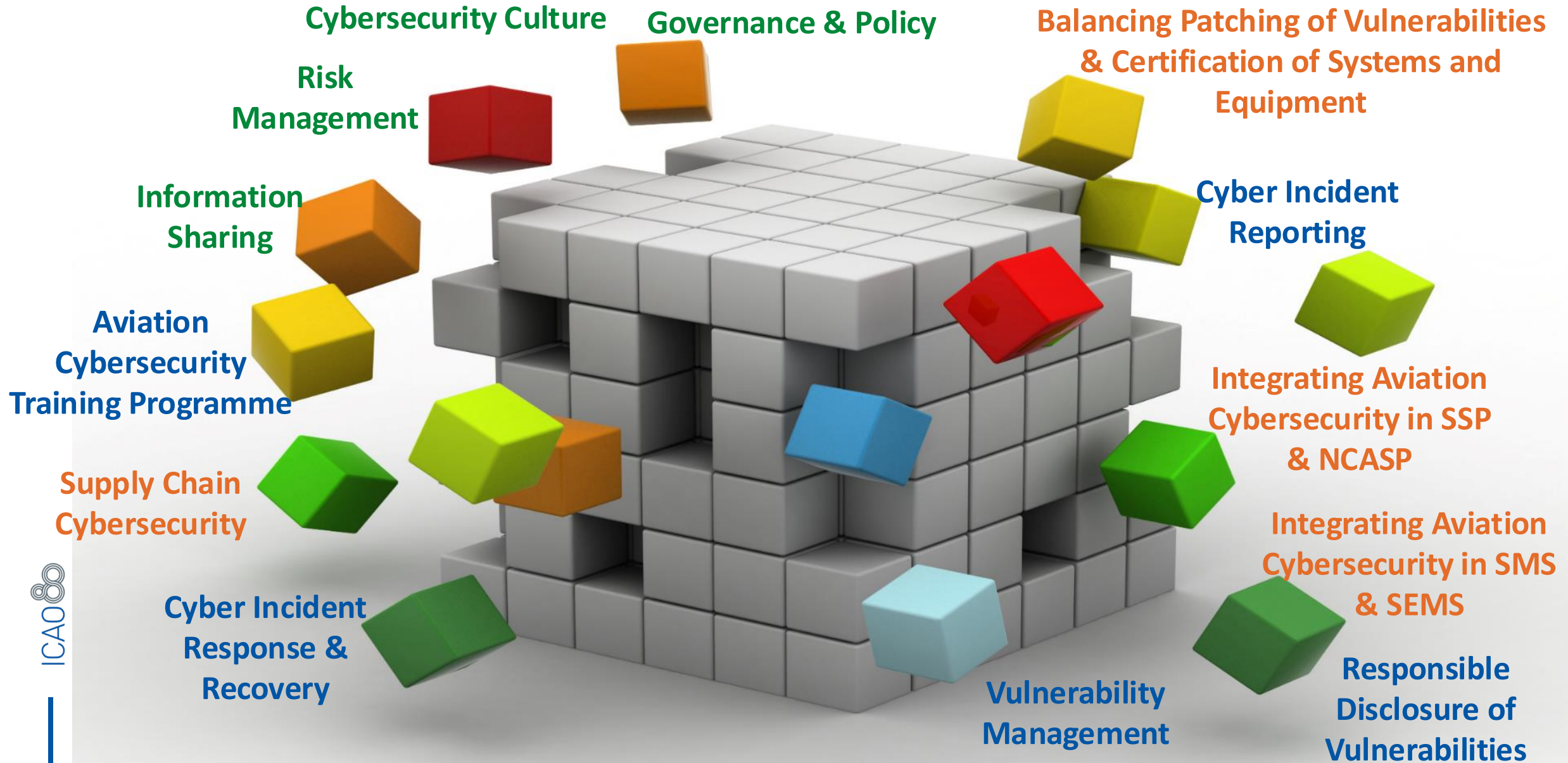
Approved by and published under
the authority of the Secretary General

First Edition — 2025

International Civil Aviation Organization

Guidance Material in the Pipeline

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Guidance Material in the Pipeline – Aviation Cybersecurity Manual

- Introduction / Executive Summary / Scope / Acronyms
- Glossary of Terms
- State Policy & Regulatory Aspects:
 - Aviation Cybersecurity Governance
 - Aviation Cybersecurity Policy
 - Principles for Integrating aviation cybersecurity into the State Safety Program (SSP)/National Civil Aviation Security Program (NCASP)
 - National/International Legal framework
 - Oversight Functions
- Integrating aviation cybersecurity into SMS, SEMS and ISMS
- Cyber Risk Management
- Cybersecurity Culture
- Personnel Security
- Insider Threat
- Physical Security
- Cyber Information Sharing
- Cyber Incident Reporting
- Cyber Supply Chain Management
- Cyber Incident Response & Recovery / Emergency Response Planning
- Vulnerability Management Programme
- Balancing Patching Vulnerabilities and certification requirements
- Responsible Disclosure of Vulnerabilities
- Continuous Improvement
- Aviation Cybersecurity Training Programme
- Quality Management
- Appendices

Available ICAO Capacity Building Resources

- Foundations of Aviation Cybersecurity Leadership and Technical Management (with Embry-Riddle Aeronautical University)
<https://www.enrole.com/erau/jsp/course.jsp?categoryId=5586BD00&courseId=SGC-1102>
- Aviation Cybersecurity Oversight (with UK CAAi)
<https://caainternational.com/course/icao-aviation-cybersecurity-oversight/>



ICAO Aviation Cybersecurity
Strategy and Action Plan



Estrategia y Plan de Acción de
Ciberseguridad de la Aviación de
la OACI



Please answer
a
Questionnaire
by accesing
the QR Code

Thank You

