ICAO Doc 9760 (Airworthiness Manual) 3rd Edition-2014

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Air Navigation Bureau
ICAO-HQ

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Regional Officer, Flight Safety
ICAO MID Regional Office

Introductions and administrative arrangements

- Introductions
- Working arrangements

✓ Building & facilities
✓ Cell phones
✓ Questions
✓ Parking Lot
✓ Programme
✓ Feed Back Form

Airworthiness Manual Doc 9760 Third Edition
Khartoum, Sudan
(27-29 May 2014)
Seminar Schedule

DAY 1: Tuesday, 27 May 2014	
9.00-9.30	Presentation/Seminar arrangements
9.30-10.30	Introduction
10.30-10.45	**Coffee Break**
10.45-12.00	Doc 9760 Part I – Definitions and Abbreviations
12.00-13.00	**Lunch Break**
13.00-14.30	Doc 9760 Part II – Airworthiness Organizational Structure and State responsibilities
14.30-14.45	**Coffee Break**
14.45-16.00	Doc 9760 Part III – State of Registry

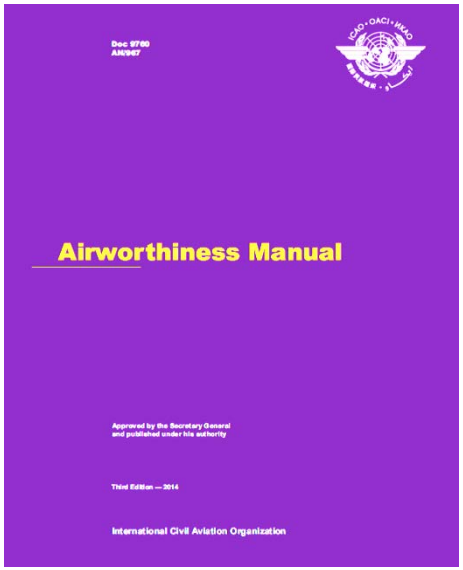
DAY 2: Wednesday, 28 May 2014	
9.00-10.30	Doc 9760 Part III – State of Registry
10.30-10.45	Coffee Break
10.45-12.00	Doc 9760 Part IV – State of the Operator
12.00-13.00	Lunch Break
13.00-14.30	Doc 9760 Part IV – State of the Operator
14.30-14.45	Coffee Break
14.45-16.00	Doc 9760 Part IV – State of the Operator

DAY 3: Thursday, 29 May 2014	
9.00-10.30	Doc 9760 Part V – State of Design and Manufacture
10.30-10.45	Coffee Break
10.45-12.00	Quiz
12.00-13.00	Lunch Break
13.00-14.30	Discussion/Conclusion
14.30-15.00	Closing

Introductions and administrative arrangements Programme

Airworthiness seminar

Opening, introduction and administrative announcements
Module 1 – Overview
Module 2 – Part I of Doc 9760
Module 3 – Part II of Doc 9760
Module 4 – Part III of Doc 9760
Module 5 – Part IV of Doc 9760
Module 6 – Part V of Doc 9760
Quiz and closing



Introductions and administrative arrangements

Module 1 - Overview

This module….

- Objectives of the seminars
- ICAO Structure
- Discussion – airworthiness vs continuing airworthiness
- Purpose of Doc 9760
- Background of changes to Doc 9760
- Contents of Doc 9760

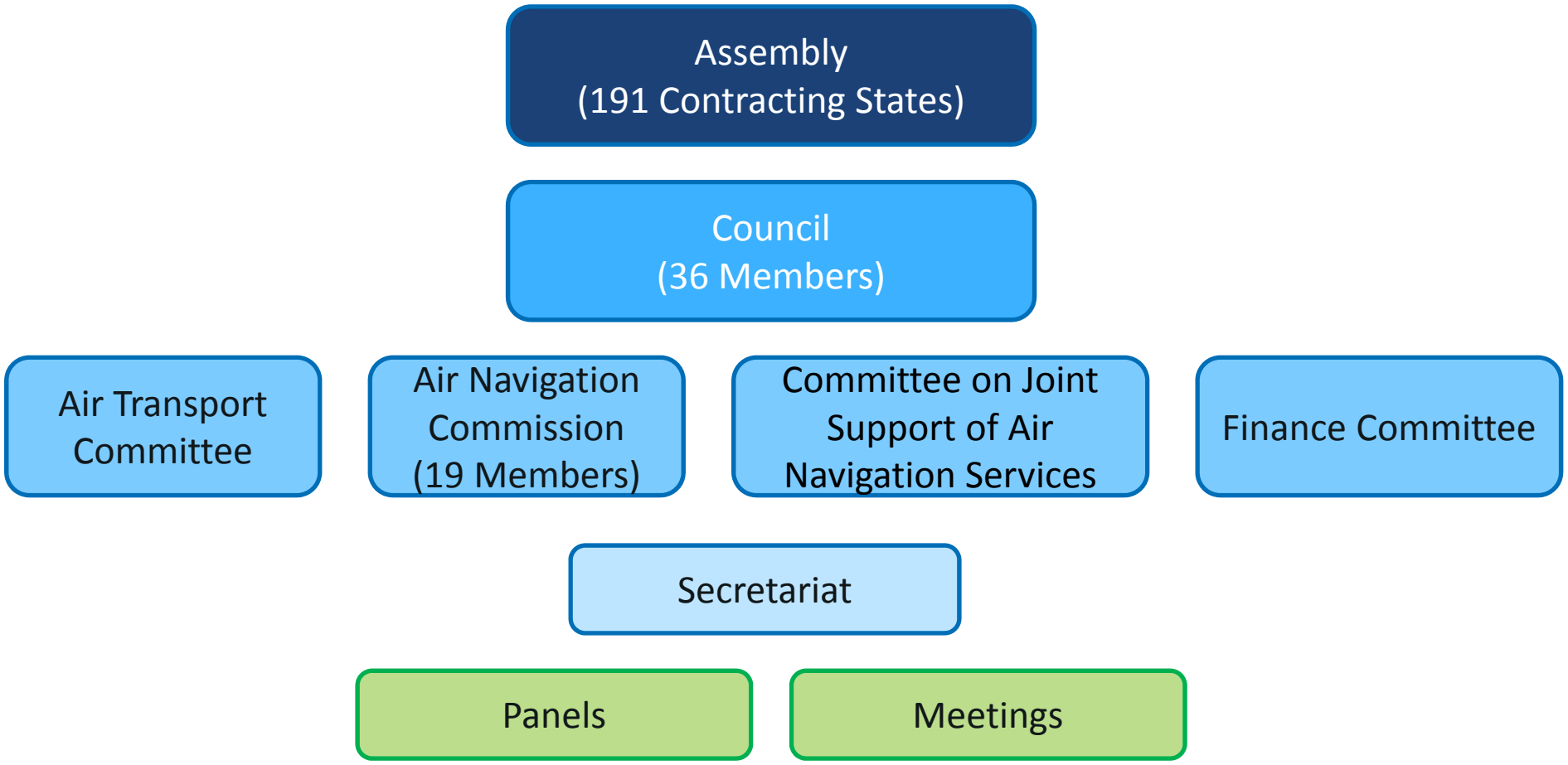
Module 1 - Overview

- Purpose of the seminar

✓ To familiarize users with the 3rd edition of Doc 9760 (Airworthiness Manual)
✓ Provide an introduction to the contents of the Manual
✓ Support States in their development of regulations, processes and procedures.
✓ Seek comments to improve the contents of the Manual

Module 1 – Overview

ICAO Structure



International Civil Aviation Organization

ICAO Member States (191)

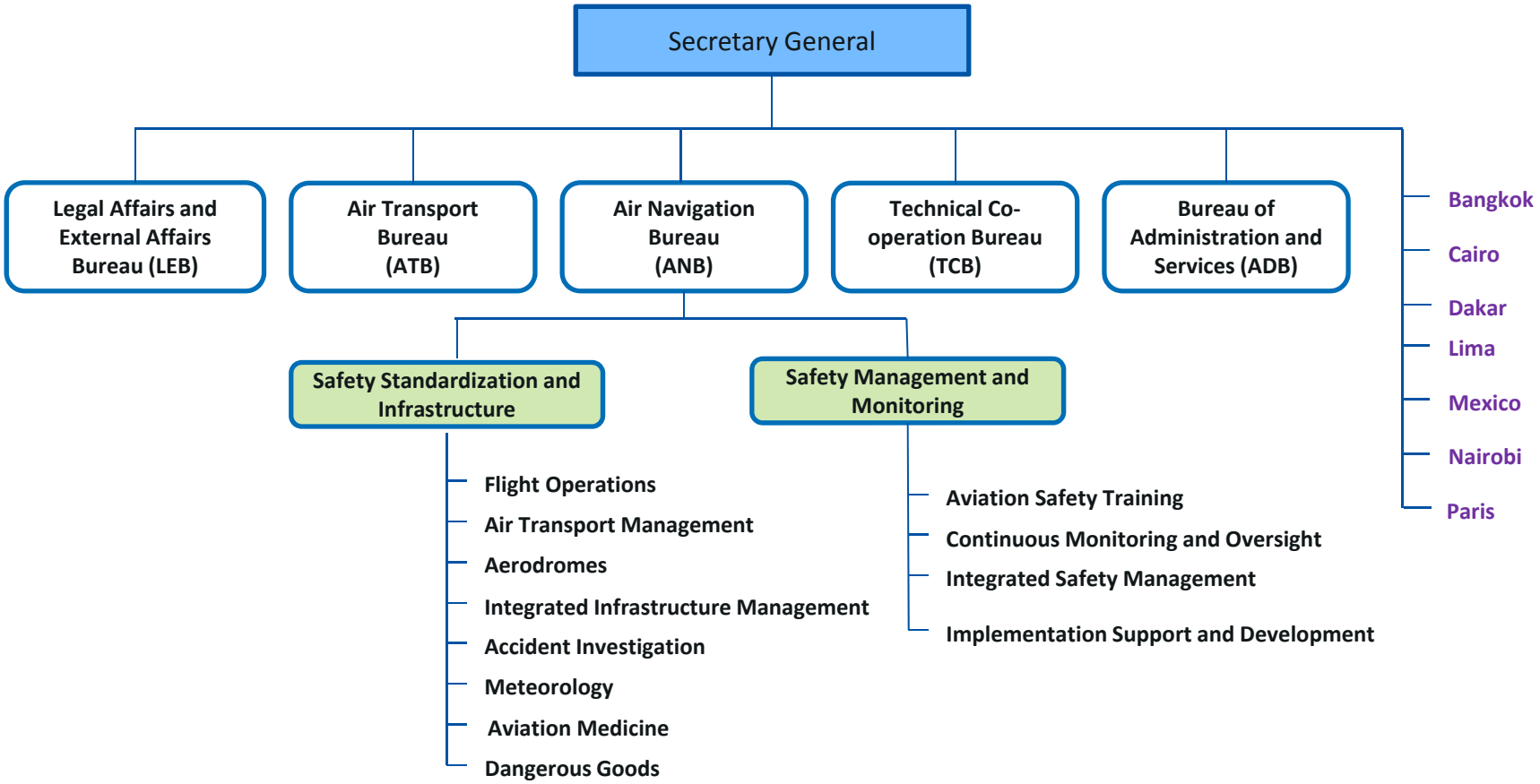
ICAO Assembly

ICAO Council

Air Navigation Commission

Module 1 – Overview

Secretariat Structure



Module 1 - Overview

Flight Operations structure

Mr Mitchell Fox
Chief, Flight Operations Section

Miguel Marin
Technical Officer
Operations

Henry Defalque
Technical Officer
Operations / PEL

Alain Coutu
Technical Officer
Airworthiness

Nicole Barrette - Sabourin
Training Officer
Training

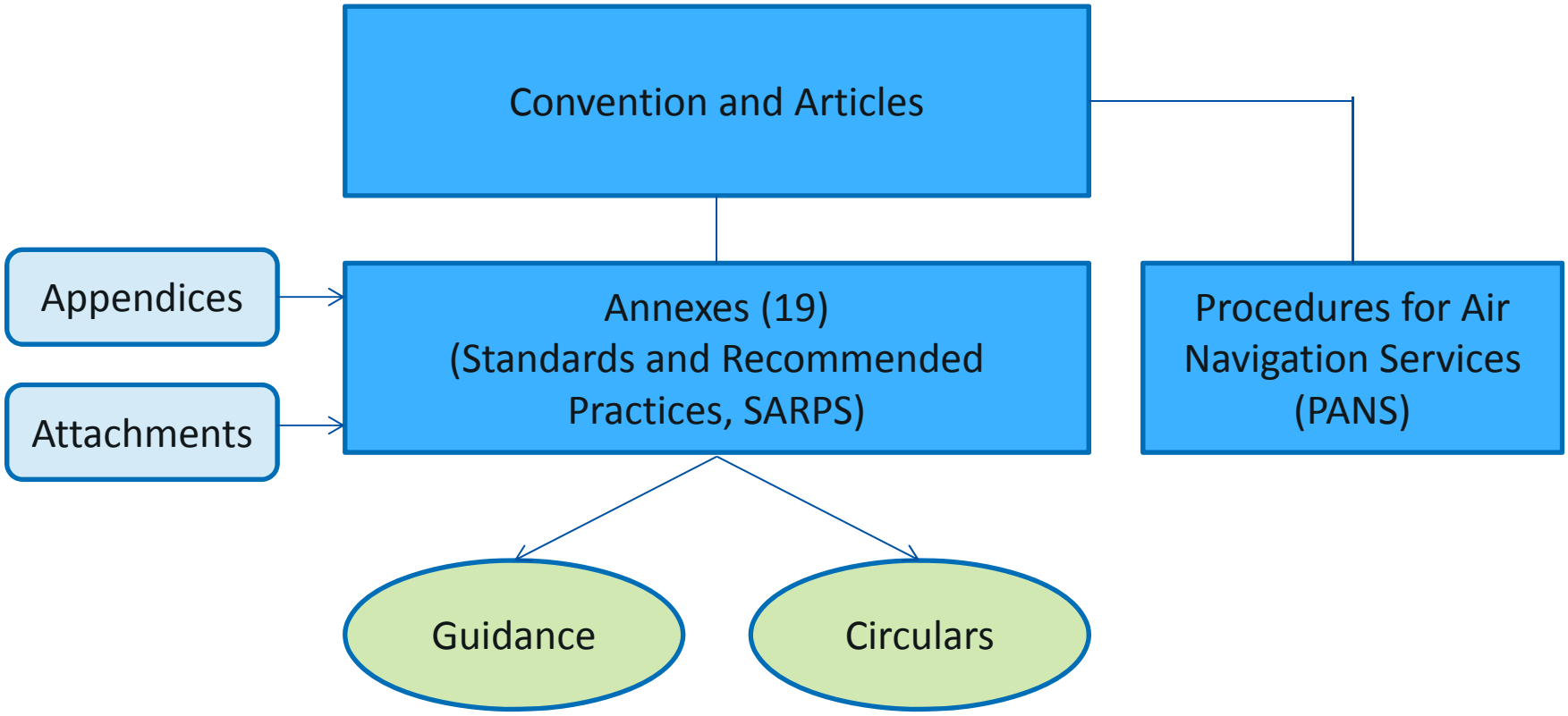
Michelle Millar
Technical Officer
Operations / Human Factors

Martin Maurino
Safety, Efficiency and Operations Officer

Annex 1 – Personnel Licensing
Annex 6 – Operation of Aircraft
Annex 7 – Aircraft Nationality and Registration Marks
Annex 8 – Airworthiness of Aircraft

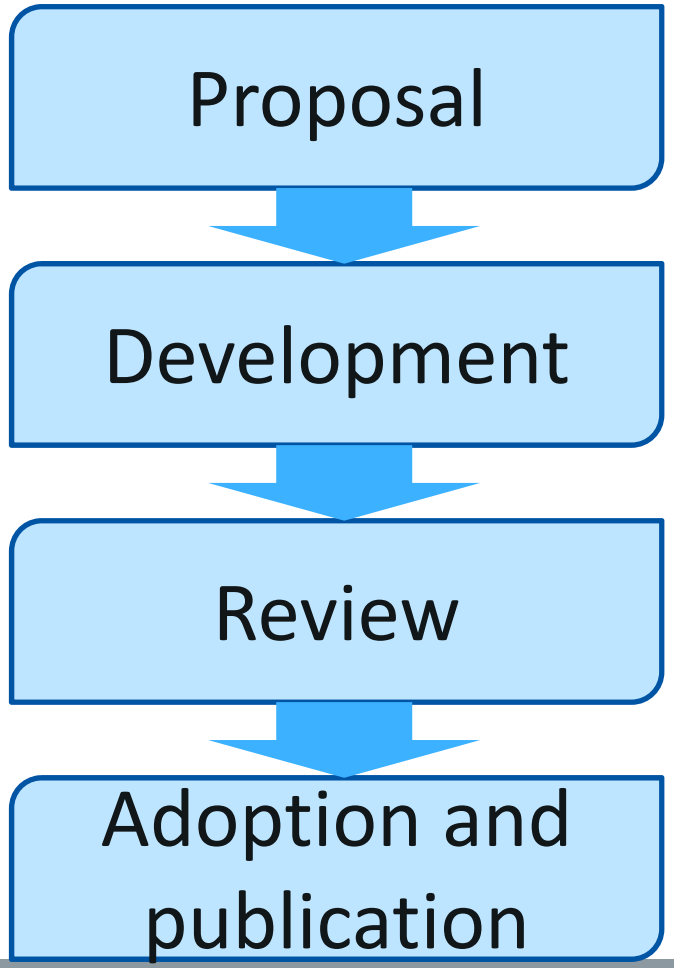
Module 1 – Overview

ICAO Documentation structure

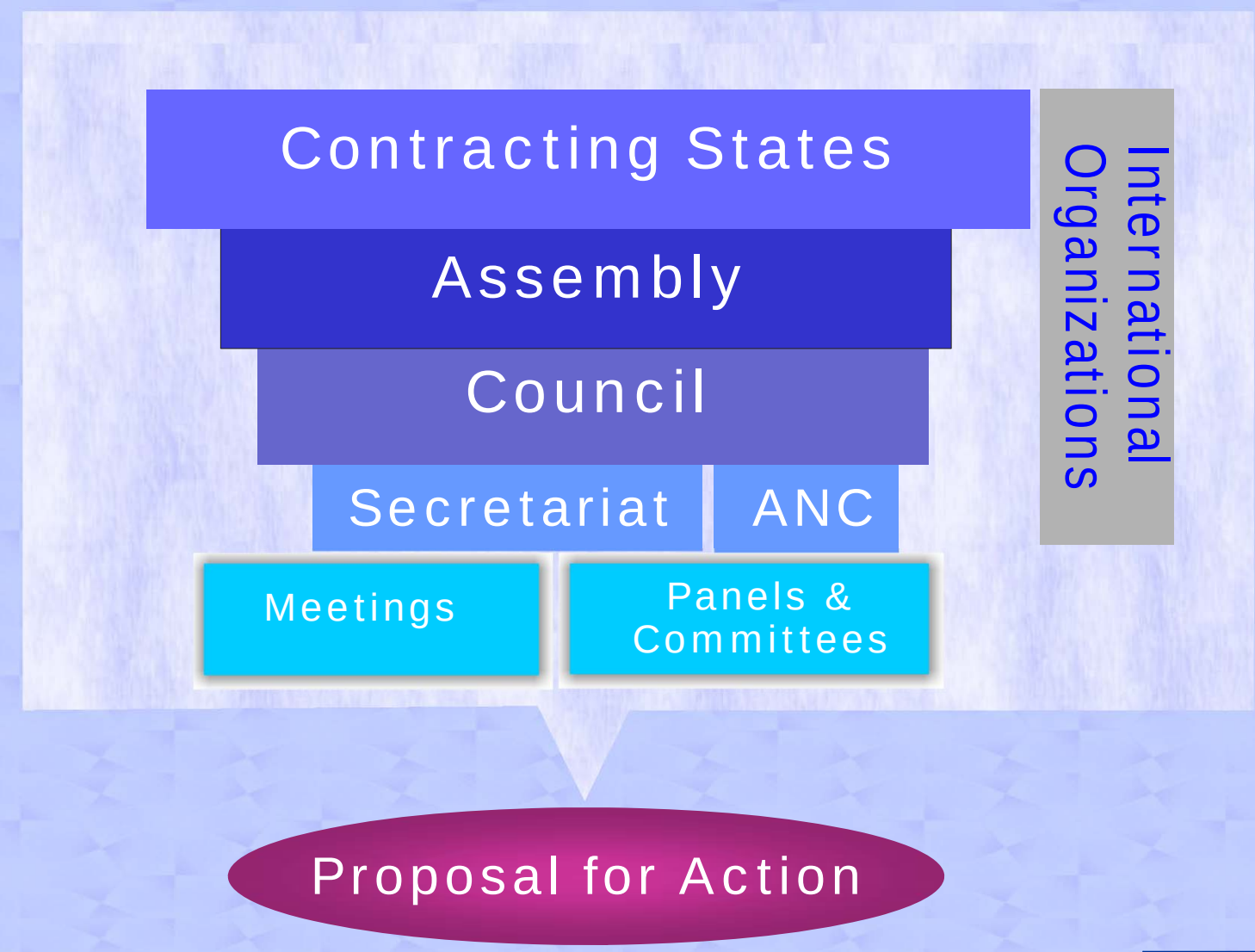


Module 1 - Overview

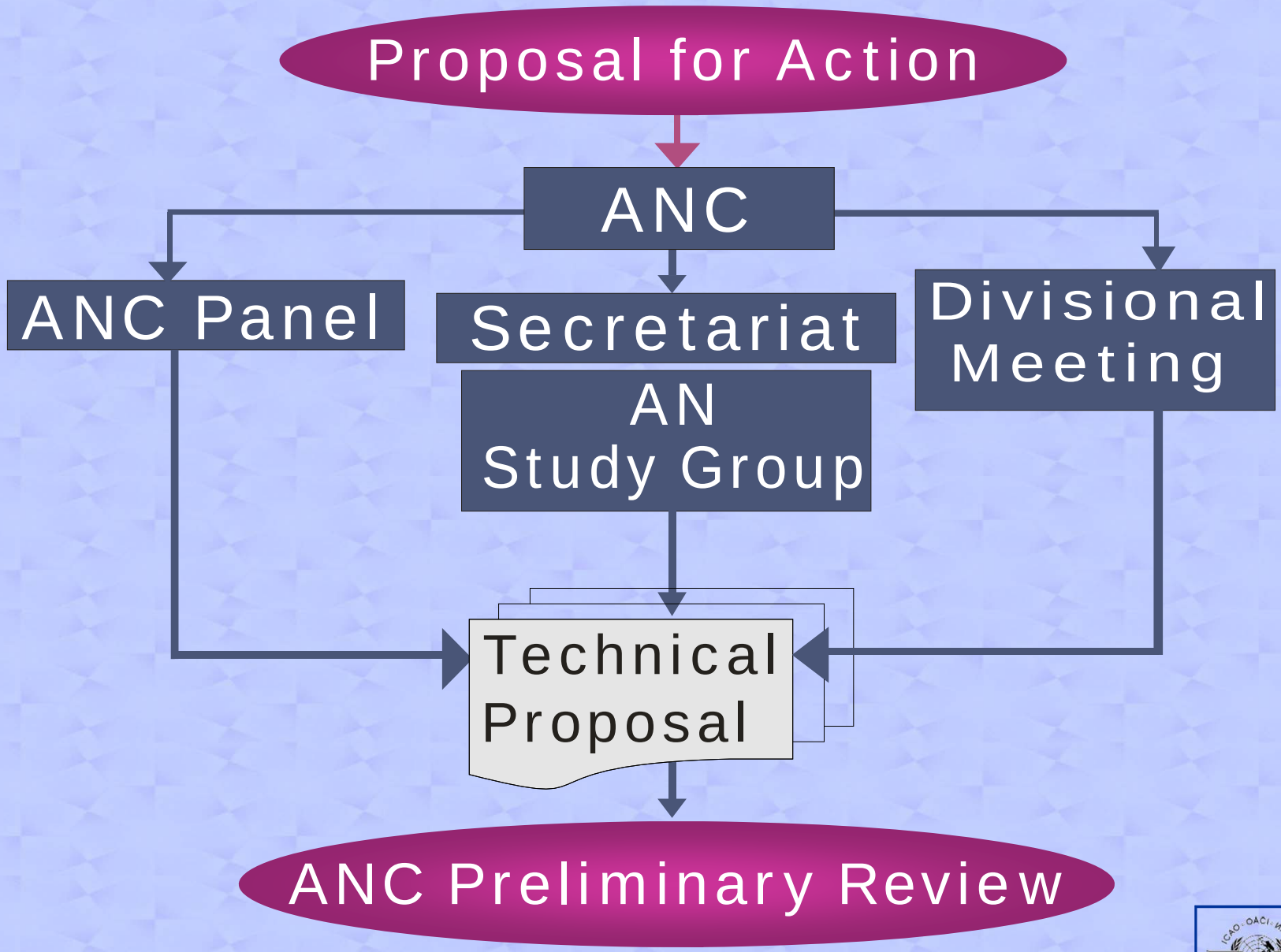
Making of a ICAO Standard



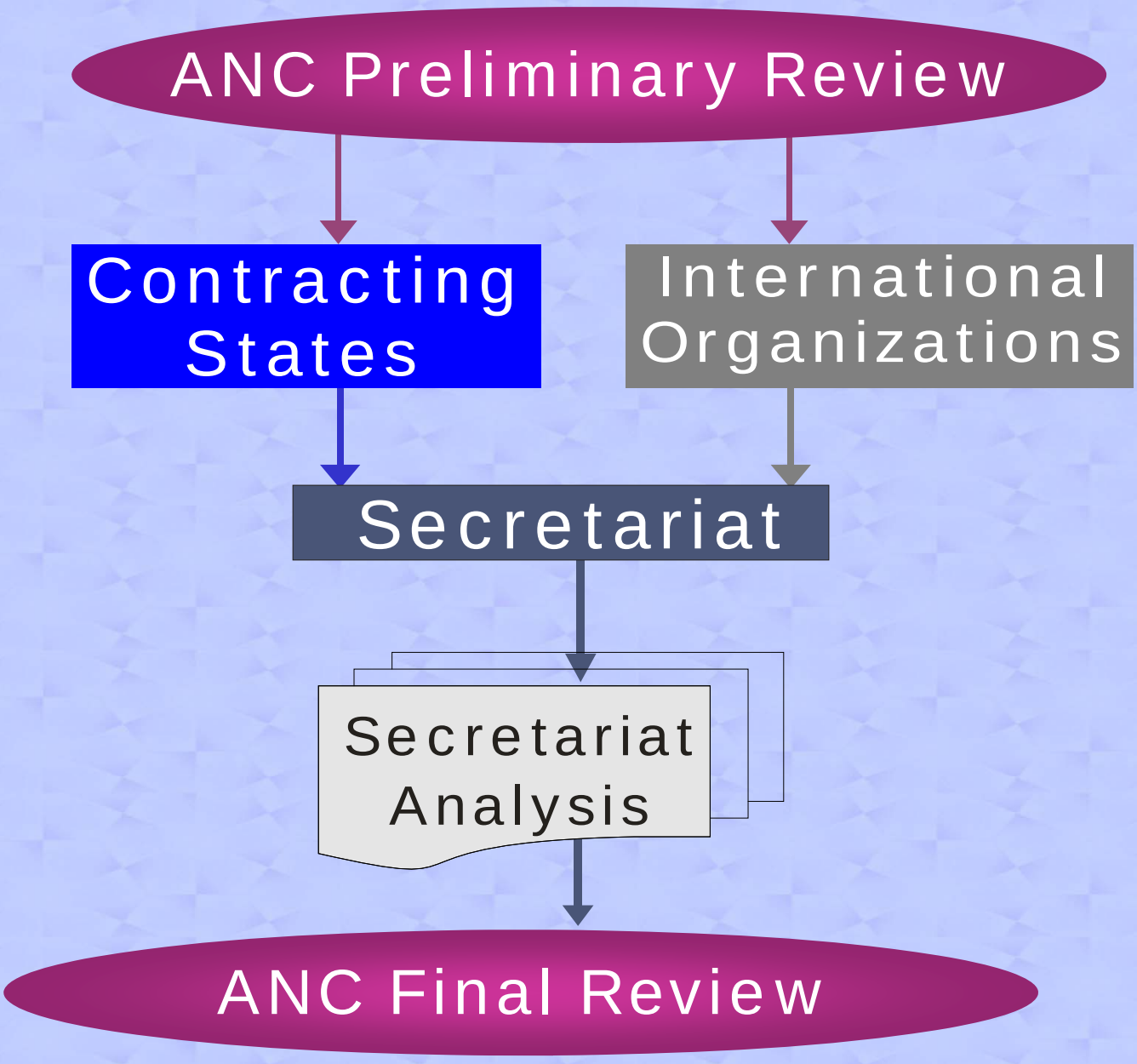
Origin of Proposal



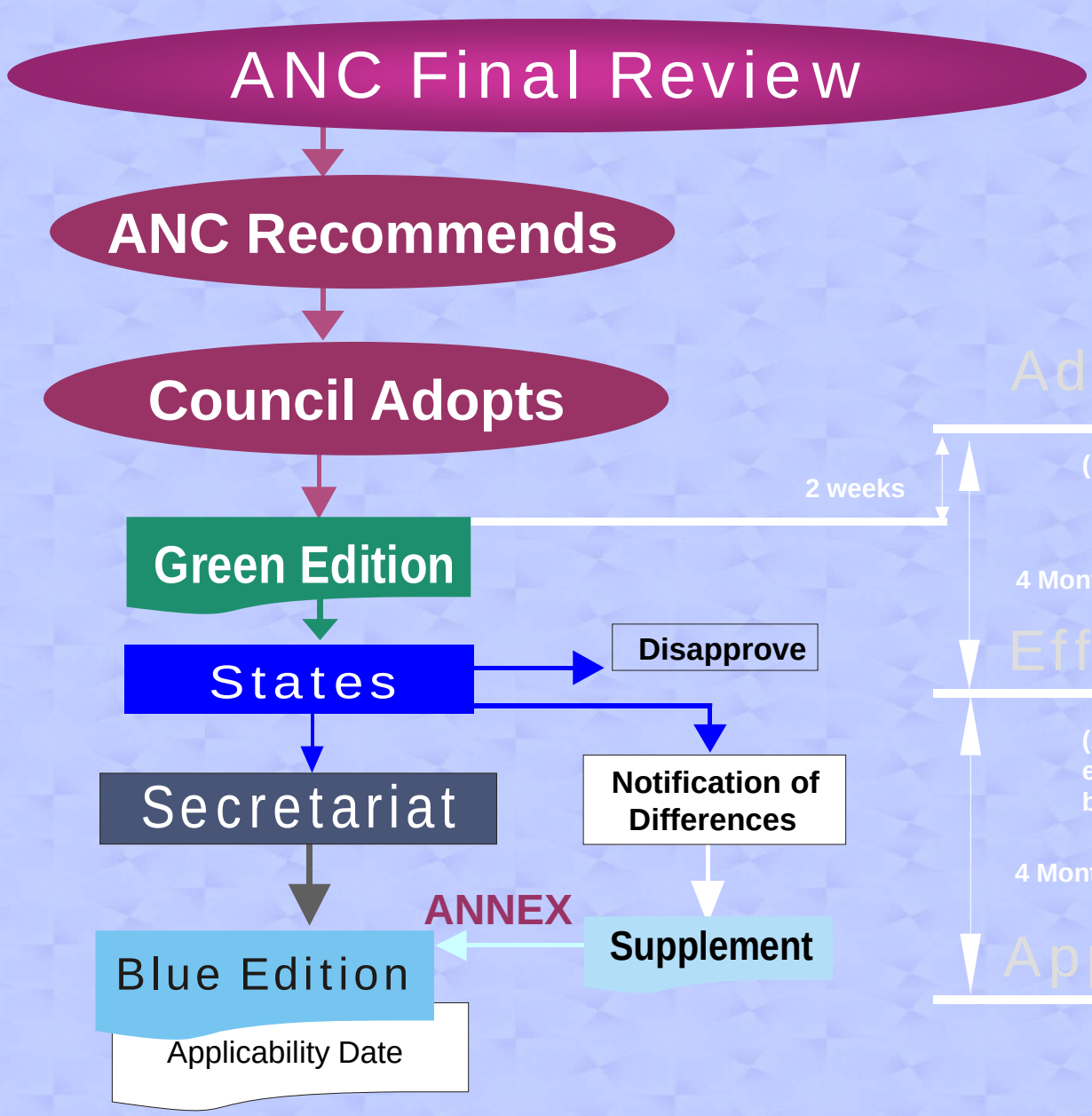
Development Phase



Review Phase



Adoption / Publication Phase



ANNEX

Adoption Date

(Usually March)

2 weeks

4 Months

Effective Date

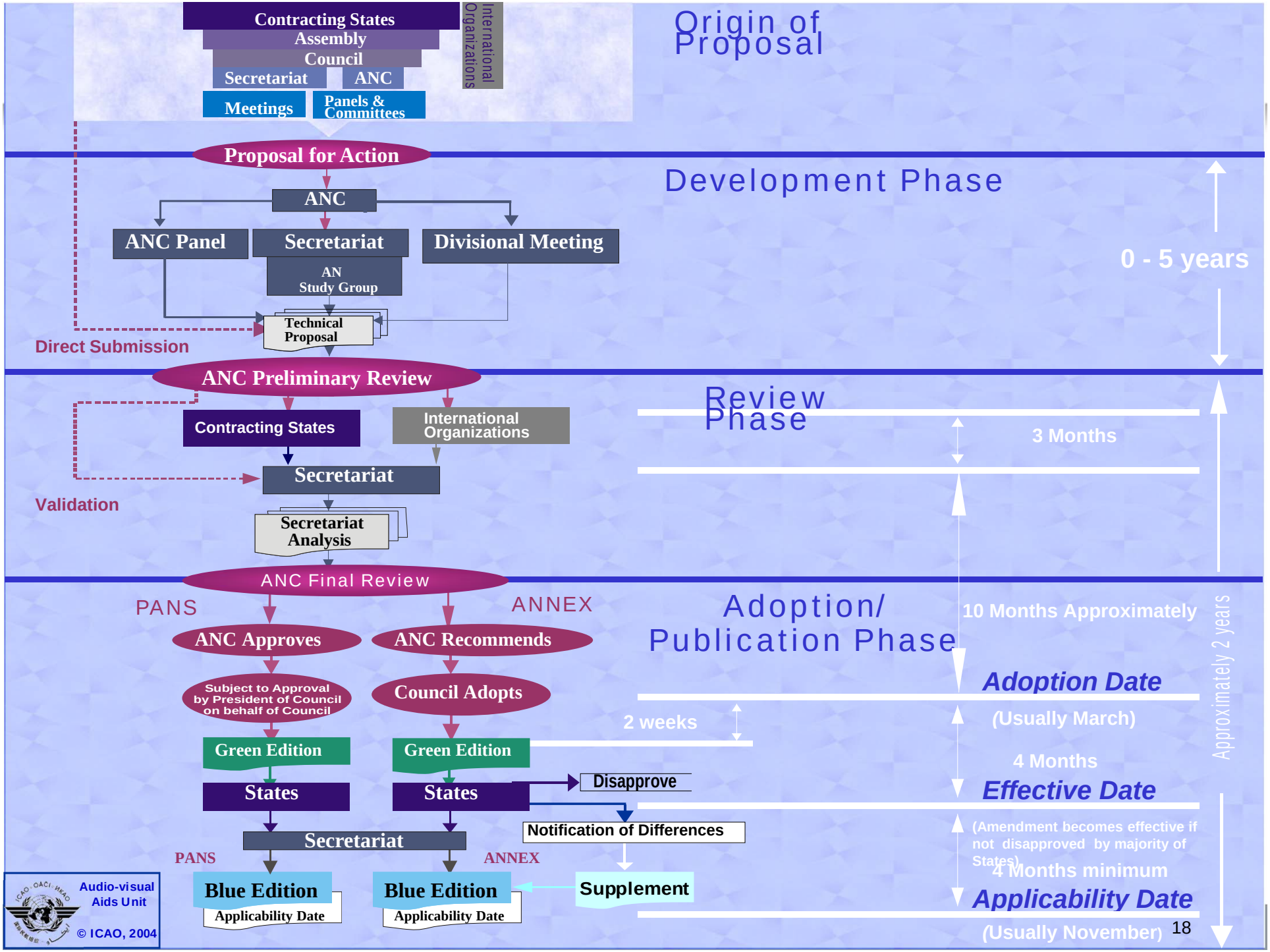
(Amendment becomes effective if not disapproved by majority of States)

4 Months (minimum)

Applicability Date

(Usually November)

Audio-visual Aids Unit


Contracting States
Assembly
Council
Secretariat
ANC
Meetings
Panels & Committees
International Organizations
Origin of Proposal
Proposal for Action
ANC
ANC Panel
Secretariat
Divisional Meeting
AN Study Group
Technical Proposal
Direct Submission
Development Phase
0 - 5 years
ANC Preliminary Review
Contracting States
International Organizations
Secretariat
Validation
Secretariat Analysis
Review Phase
3 Months
ANC Final Review
PANS
ANNEX
ANC Approves
ANC Recommends
Subject to Approval by President of Council on behalf of Council
Council Adopts
Adoption/ Publication Phase
10 Months Approximately
Adoption Date
(Usually March)
2 weeks
Green Edition
Green Edition
4 Months
Effective Date
Disapprove
States
States
Notification of Differences
(Amendment becomes effective if not disapproved by majority of States)
Secretariat
PANS
ANNEX
4 Months minimum
Blue Edition
Applicability Date
Blue Edition
Applicability Date
Supplement
Applicability Date
(Usually November)
Approximately 2 years
Audio-visual Aids Unit
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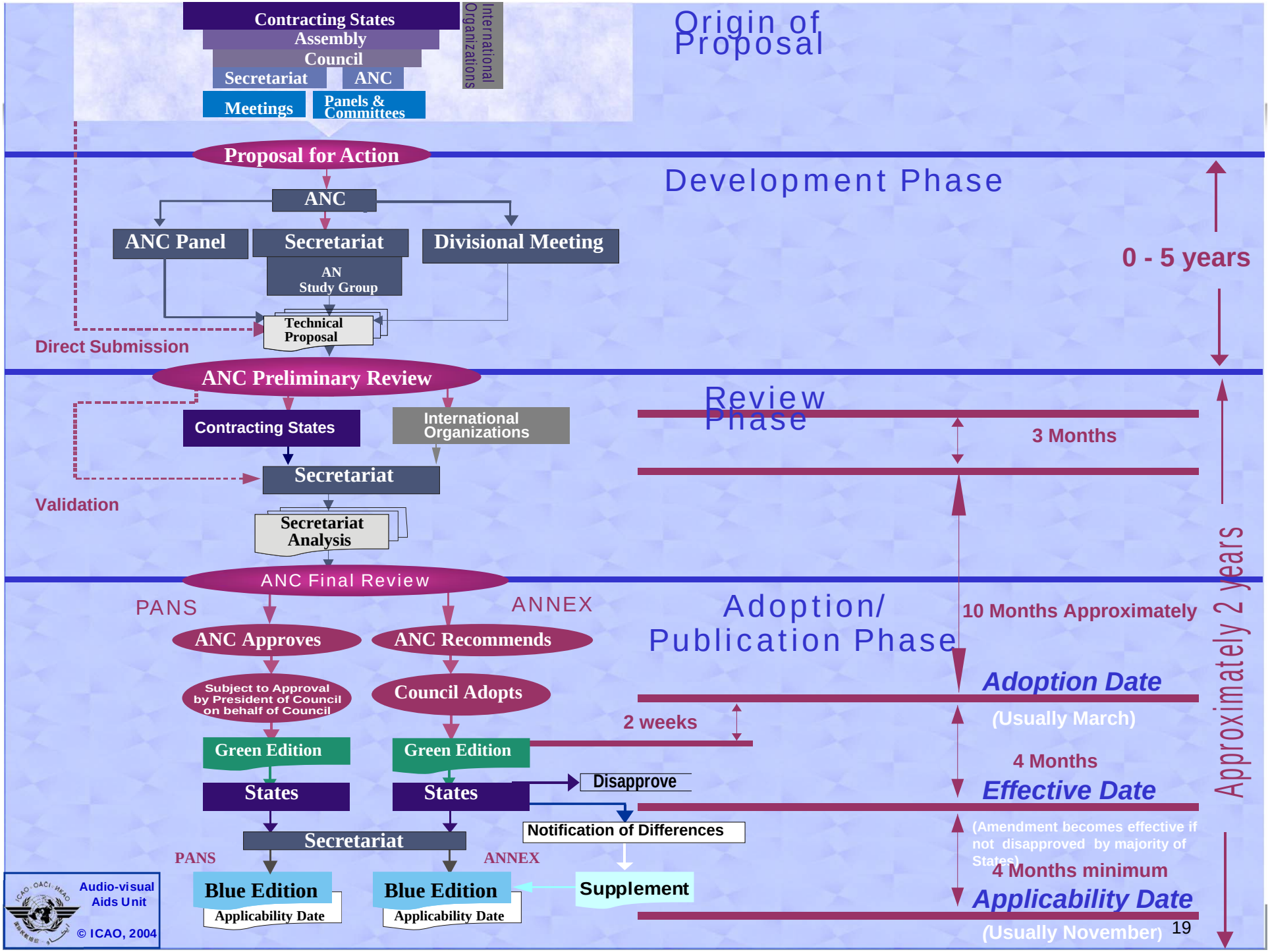
Origin of Proposal
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Adoption/ Publication Phase
10 Months Approximately
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ANNEX
Blue Edition
Applicability Date
Blue Edition
Applicability Date
Supplement
Applicability Date
(Usually November)
Approximately 2 years
Audio-visual Aids Unit
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Module 1 – Overview

Objectives of the seminar

At the end of this seminar the participant would be able to identify, with reference to the ICAO Doc 9760:

- the structure of an Airworthiness Organization and its airworthiness responsibilities
- the roles and responsibilities of the *State of Registry, State of the Operator and State of Design and Manufacture.*

Module 1 – Overview Discussion

- What is Airworthiness / Airworthy?

Module 1 – Overview

Discussion

Airworthi
mea
aircraft
for safe
Wikipedia

Just follow the manuals...

Joe Mechanic

To be **airworthy**:

(1) The aircraft must conform to its Type Certificate (TC).

aircraft must be in a condition for eration.

Airworthy - The status of an aircraft, engine, propeller or part when it conforms to its approved design and is a condition for safe operation

Annex 8

as when an aircraft, including its component parts, meets its type design or properly altered condition and it is in a condition for safe operation

CASA

Module 1 – Overview
Discussion

Annex 8, Definitions

Appropriate airworthiness requirements

The comprehensive and detailed airworthiness codes established, adopted or accepted by a Contracting State for the class of aircraft, engine or propeller under consideration.

Annex 8, Chapter 3.2.1

A Certificate of Airworthiness shall be issued by a Contracting State on the basis of satisfactory evidence that the aircraft complies with the design aspects of the appropriate airworthiness requirements.

Module 1 – Overview
Discussion



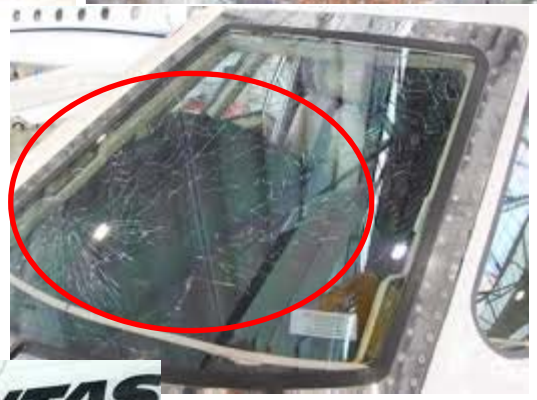


Module 1 – Overview
Discussion

Module 1 – Overview
Discussion





Module 1 – Overview
Discussion

- What is continuing airworthiness?

Module 1 – Overview
Discussion

Annex 8, Definitions

Continuing airworthiness

The set of processes by which an aircraft, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life

Module 1 – Overview
Incidents reported by States
(from ECCAIRS 2005 to 2010)

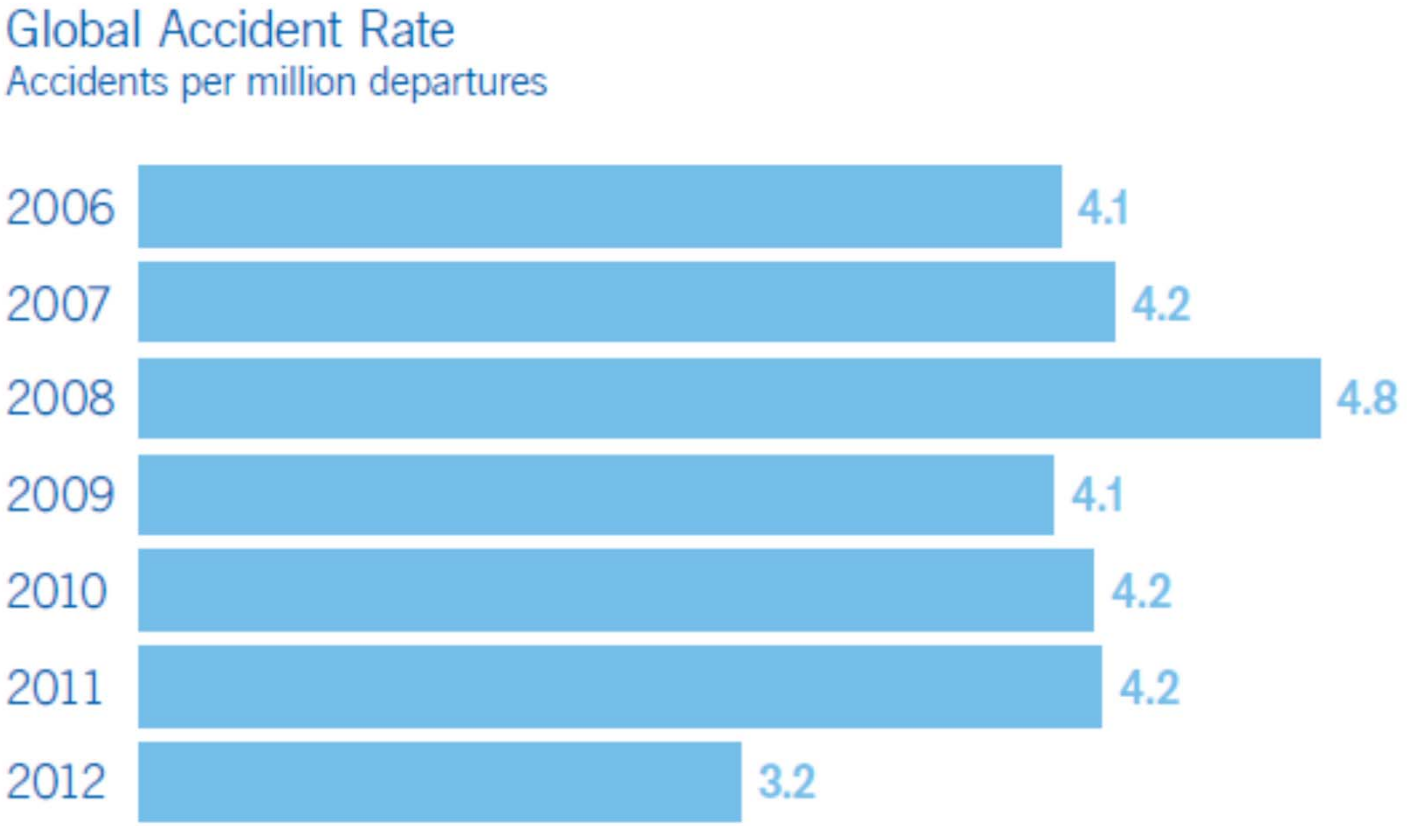
Occurrence Category	No of Occurrences (Primary Event) [by Occurrence Category]
BIRD (BIRD)	0
CONTROLLED FLT INTO OR TOWARD TERRAIN (CTOL)	0
ICING (ICE)	0
UNINTENDED FLIGHT IN IMC (UIMC)	0
EXT LOAD RELATED OCCURRENCES (EXTL)	0
LOSS OF LIFTING CONDITIONS EN-ROUTE (LOLI)	0
GLIDER TOWING RELATED EVENTS (GTOW)	0
EVACUATION (EVAC)	10
SECURITY RELATED (SEC)	11
RWY INCURSION – ANIMAL (RI-A)	13
FIRE/SMOKE POST-IMPACT (F-POST)	17
ABRUPT MANEUVRE (AMAN)	19
ICING (ICE)	27
WINDSHEAR OR THUNDERSTORM (WSTRW)	32
CABIN SAFETY EVENTS (CABIN)	33
UNDERSHOOT/OVERSHOOT (USOS)	49
ADRM	50
LOSS OF CONTROL - GROUND (LOC-G)	78
LOW ALTITUDE OPERATIONS (LALT)	93
FUEL RELATED (FUEL)	93
TURBULENCE ENCOUNTER (TURB)	103
GROUND HANDLING (RAMP)	110
CFIT (CFIT)	113
FIRE/SMOKE NON-IMPACT (F-NI)	141
GROUND COLLISION (GCOL)	155
UNK	176
LOSS OF CONTROL – INFLIGHT (LOC-I)	189
RWY INCURSION – VEH, AIRCRAFT OR PERSON (RI-VAP)	191
ATM/CNS (ATM)	221
ABNORMAL RUNWAY CONTACT (ARC)	273
RUNWAY EXCURSION (RE)	351
Uncategorised	397
OTHER (OTHR)	451
SYS/COMP FAILURE OR MALFUNCTION (P/LANT) (SCF-PP)	477
A/PROX/ ACAS ALERT/ LoS/ NEAR MAC/ MAC (MAC)	592
SYS/COMP FAILURE OR MALFUNCTION (NON-P/PLANT) (SCF-NP)	628
	5093
Note: SCF-PP (item 35) + SCF-NP (item 37) =	1105 which is 22% of total occurrences

System / Component failure or malfunction (powerplant) = 477 of 5093 incidents

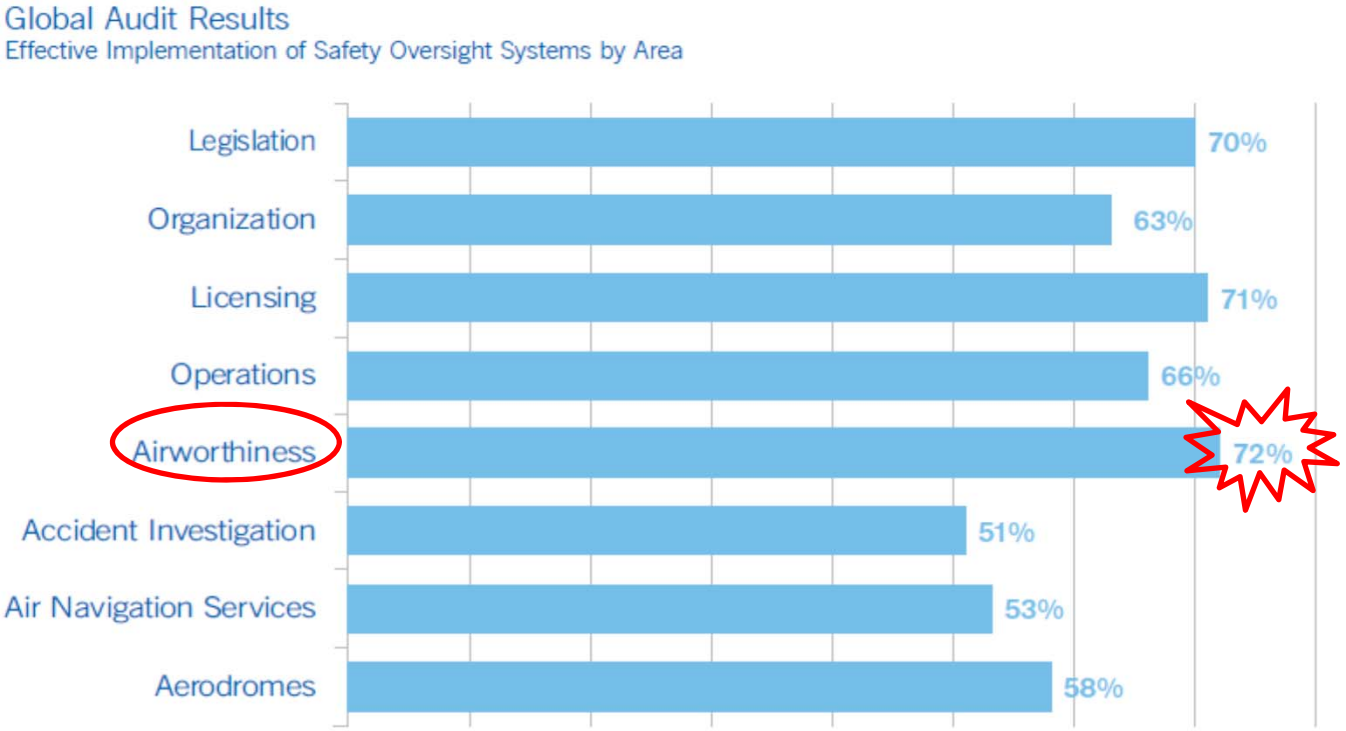
System / Component failure or malfunction (non-powerplant) = 628 of 5093 incidents

Component failure (total) = 1105 of 5093 incidents; which is 22% of total incidents

Module 1 – Overview
Global accident rate



Module 1 – Overview
Global audit results



Quiz

Do you know?

1. How many Parts are there in 3nd edition of Doc 9760?
2. Where can you find guidance on the structure for an Airworthiness Organization?
3. Whose responsibility is it to issue a Certificate of Airworthiness?
4. A Maintenance Organisation approval is granted by whom?
5. How many phases are in the process for the issuance of an Air Operator Certificate?
6. Who grants the approval for Extended Diversion Time Operations?

Quiz

Do you know?

7. What are the State of Registry's responsibilities for continuing airworthiness?

8. Which State approves Major repairs and modifications?

9. What are the State of Design's responsibilities for continuing airworthiness?

10. Whose responsibility is it to issue the Mandatory Continuing Airworthiness Instruction?

11. Whose responsibility is it to approve the Maintenance Programme?

12. Who approves the Reliability Programme?

Quiz

Do you know?

13. Can an aircraft be registered in more then one State?

14. Can one airplane have a different States of Registry then the State of the Operator?

Module 1 – Overview
Purpose of Doc 9760

- Outlines the duties and responsibilities of States to meet the provisions of Annex 8 and Annex 6 with regards to the airworthiness and continuing airworthiness of aircraft
- Provides guidance and support for States to meet their airworthiness safety oversight functions as described in Doc 9734 Part A (Safety Oversight Manual)

Module 1 – Overview
Purpose of Doc 9760

Annex 8 (Foreword)

Use of the guidance material in the Airworthiness Manual *(Doc 9760)*.

Contracting States are invited to note that the material in the *Airworthiness Manual* is intended to guide them in the development of their detailed and comprehensive national codes with a view to introducing uniformity in those national codes. The material has no mandatory status and Contracting States are quite free to differ from it either in detail or in methods.

Module 1 – Overview
Purpose of Doc 9760

ICAO has identified the following critical elements (CE) of a State's safety oversight system:

CE 1: Primary Legislation
CE 2: Specific Operating Regulations
CE 3: State Civil Aviation System and Safety Oversight Functions
CE 4: Technical Personnel Qualification and Training
CE 5: Technical guidance, tools and the provision of safety-critical information
CE 6: Licensing, certification, authorization and approval obligations
CE 7: Surveillance obligations
CE 8: Resolution of safety concerns

(Doc 9734 Part A - Safety Oversight Manual)

Module 1 – Overview
Purpose of Doc 9760

CE-2. *Specific operating regulations:*

The provision of adequate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation and providing for standardized operational procedures, equipment and infrastructures (including safety management and training systems), in conformance with the Standards and Recommended Practices (SARPs) contained in the Annexes to the Convention on International Civil Aviation.

Note.— The term "regulations" is used in a generic sense to include but is not limited to instructions, rules, edicts, directives, sets of laws, requirements, policies, and orders.

(Doc 9734 Part A- Safety Oversight Manual)

Module 1 – Overview
Purpose of Doc 9760

CE 5. *Technical guidance, tools and the provision of safety-critical information*:

- States should provide technical guidance (including processes and procedures), tools (including facilities and equipment) and safety-critical information, as applicable, to its technical personnel to enable them to perform their safety oversight functions.
- In addition, this includes the provision of technical guidance to the aviation industry on the implementation of applicable regulations and instructions.

(Doc 9734 Part A- Safety Oversight Manual)

Module 1 – Overview
Purpose of Doc 9760

CE-6. Licensing, certification, authorization and/or approval obligations:

The implementation of processes and procedures to ensure that personnel and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a licence, certificate, authorization and/or approval to conduct the relevant aviation activity.

(Doc 9734 Part A- Safety Oversight Manual)

Module 1 – Overview
Background - References

- ✓ Doc 9760 Advance 2nd edition
- ✓ Annex 1 (Personnel Licensing)
- ✓ Annex 6 (Operations of Aircraft)
- ✓ Annex 7 (Aircraft Nationality and Registration Marks)
- ✓ Annex 8 (Airworthiness of Aircraft)
- ✓ Annex 16 (Environmental Protection)
- ✓ Annex 19 (Safety Management)
- ✓ Doc 9734 (Safety Oversight Manual)
- ✓ Doc 9735 (USOAP Audit Programme Continuous Monitoring)
- ✓ Doc 8335 (Manual of Procedures for Operations Inspection, Certification and Continued Surveillance)
- ✓ Doc 9626 (Manual on the Regulation of International Air Transport)
- ✓ Doc 9859 (Safety Management Manual)

Module 1 – Overview
Background

- 1st Edition was published in 2001, replacing:
  - Doc 9642 (Continuing Airworthiness Manual)
  - Doc 9051 (Airworthiness Technical Manual)
  - Doc 9389 (Manual of Procedures for an Airworthiness Organization)
  - Published in 2 Volumes

- Advance 2nd Edition (unedited) included:
  - Consequential changes as a result to amendments to Annex 8
  - A new chapter on *Production*
  - Combined both Volumes into one Manual
    - The Doc 9760, Advance 2nd Edition (unedited) was placed on ICAO-Net in 2008)
    - Not published nor available in ICAO publication catalog

Module 1 – Overview
Background

- 3rd Edition
  - Completely re-structured
  - Re-organized and presented by responsibilities i.e. State of Registry, State of the Operator and State of Manufacture and Design.
  - Several Chapters were revised
  - Information is largely from previous editions of Doc 9760, with changes carried out by the ICAO Airworthiness Panel (AIRP) and updated by the Secretariat.
  - Due to the extent of the revision, changes could not be tracked. It also required the creation of a third edition.

    - Doc 9760, 3rd edition, is available on ICAO-NET

Module 1 – Overview
Contents of Doc 9760 (3rd Edition)

- Presented in 5 Parts:

Part I	(Definitions and Abbreviations)
Part II	(Airworthiness Organization Structure and Responsibilities of State)
Part III	(State of Registry)
Part IV	(State of the Operator)
Part V	(State of Design and Manufacture)

- Additional guidance on the contents of forms and the processing of applications

Module 1 – Overview
Contents of Doc 9760 (3rd Edition)

Part III – State of Registry

Part IV – State of Operator

Part V – State of Design and Manufacture

Module 1 – Overview
Roles and Responsibilities

State of Registry

- ✓ Certificate of Registration (C of R)
- ✓ Certificate of Airworthiness (C of A)
- ✓ Noise certificate
- ✓ Export C of A
- ✓ Special flight permit
- ✓ Major repairs and modifications approval
- ✓ Maintenance programme approval
- ✓ Approval of maintenance organization
- ✓ Continuing airworthiness of aircraft

Module 1 – Overview
Roles and Responsibilities

State of the Operator

- ✓ Air Operator Certificate (Airworthiness Aspects)
- ✓ Operations Specifications
- ✓ MEL
- ✓ Continuing airworthiness of aircraft

Module 1 – Overview
Roles and Responsibilities

State of Design and Manufacture

- ✓ Type certification
- ✓ Production approval / certification
- ✓ Continuing airworthiness of aircraft

Module 1 – Overview
Summary

- ✓ Objectives of the seminars
- ✓ Discussed – airworthiness vs continuing airworthiness
- ✓ Purpose of Doc 9760
- ✓ Background on changes to Doc 9760
- ✓ Contents of Doc 9760

Module 1 – Overview

Questions?

Module 2 - Part I of Doc 9760
Contents of Part I

Part I. Definitions and abbreviations

- Specific definitions of the Annexes are re-produced. Additional definitions used are specific to Doc 9760.
- New section “Abbreviations” is included

Module 2 - Part I of Doc 9760

This module….

- Commonly used definitions
- New definitions
- List of abbreviations

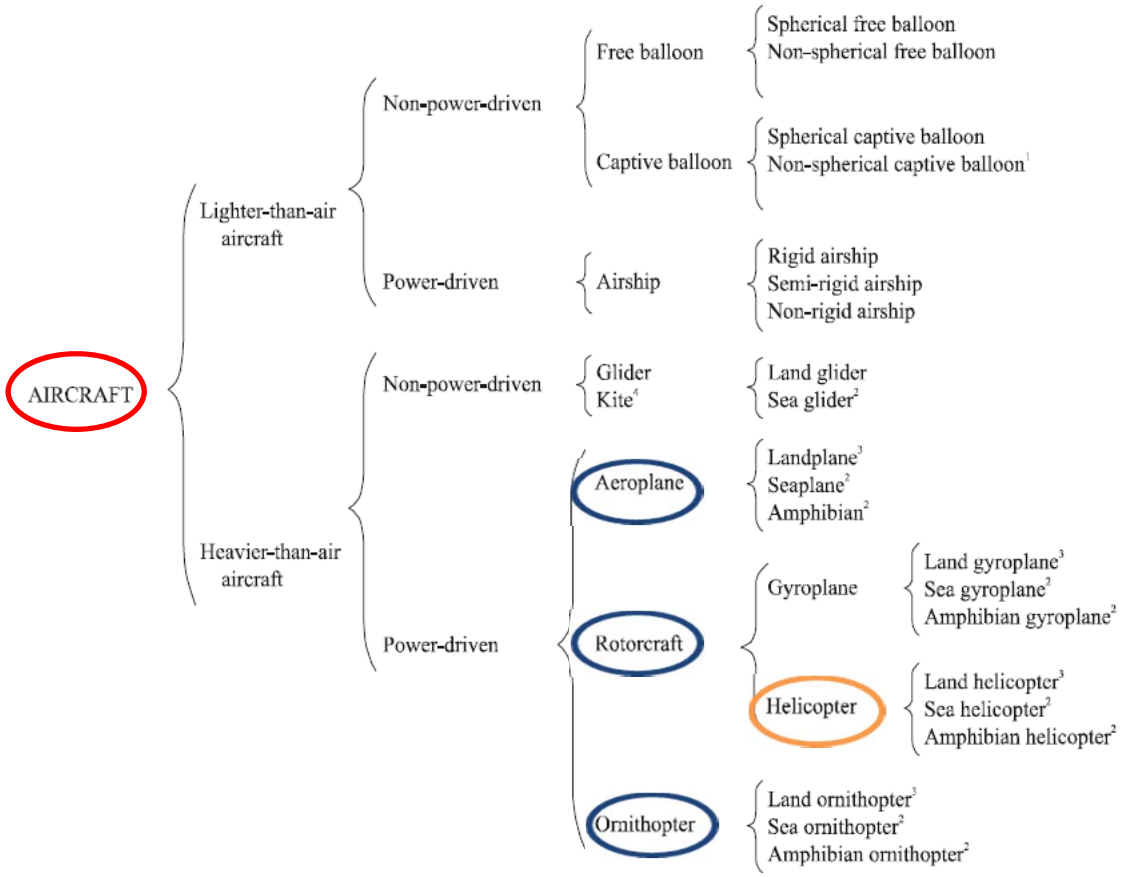
Module 2 - Part I of Doc 9760
Definitions

Lets review a few of these…..

Aeroplane A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

Aircraft Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Module 2 - Part I of Doc 9760 Definitions



Classification of aircraft

Module 2 - Part I of Doc 9760
Definitions

Remotely Piloted Aircraft System (RPAS)

Annex 7 Paragraph 2.3

Unmanned aircraft shall include unmanned free balloons and remotely piloted aircraft.

Module 2 - Part I of Doc 9760
Definitions

Extended diversion time operation (EDTO). Any operation by an aeroplane with two or more turbine engines where the diversion time to an en-route alternate aerodrome is greater than the threshold time established by the State of the Operator.

EDTO – significant system. An aeroplane system whose failure or degradation could adversely affect the safety particular to an EDTO flight, or whose continued functioning is specifically important to the safe flight and landing of an aeroplane during an EDTO diversion.

Module 2 - Part I of Doc 9760
Definitions

Appropriate airworthiness requirements The comprehensive an detailed airworthiness codes established, adopted or accepted by a Contracting State for the class of aircraft, engine or propeller under consideration.

Module 2 - Part I of Doc 9760
Definitions

Instructions for continuing airworthiness. A set of descriptive data, maintenance planning and accomplishment instructions, developed by a design approval holder in accordance with the certification basis for the product. The ICAs provide operators with the necessary information to develop their own maintenance programme and also for approved maintenance organisations to establish the accomplishment instructions.

Life-limited part. Any part of which a mandatory replacement limit (in hours, cycles or calendar time) is specified in the type design, the mandatory continuing airworthiness information or instructions for continuing airworthiness. These parts must be permanently removed from service on or before this limit is reached.

Module 2 - Part I of Doc 9760
Definitions

Maintenance programme. A document which describes the specific scheduled maintenance tasks and their frequency of completion and related procedures, such as a reliability programme, necessary for the safe operation of those aircraft to which it applies.

Mandatory Continuing Airworthiness Information. The mandatory requirements for the modification, replacement of parts, or inspection of aircraft and amendment of operating limitations and procedures for the safe operation of the aircraft. Among such information is that issued by Contracting States in the form of airworthiness directives.

Module 2 - Part I of Doc 9760
Abbreviations

Abbreviations

When the following abbreviations and acronyms are used in this manual, they have the meanings shown.

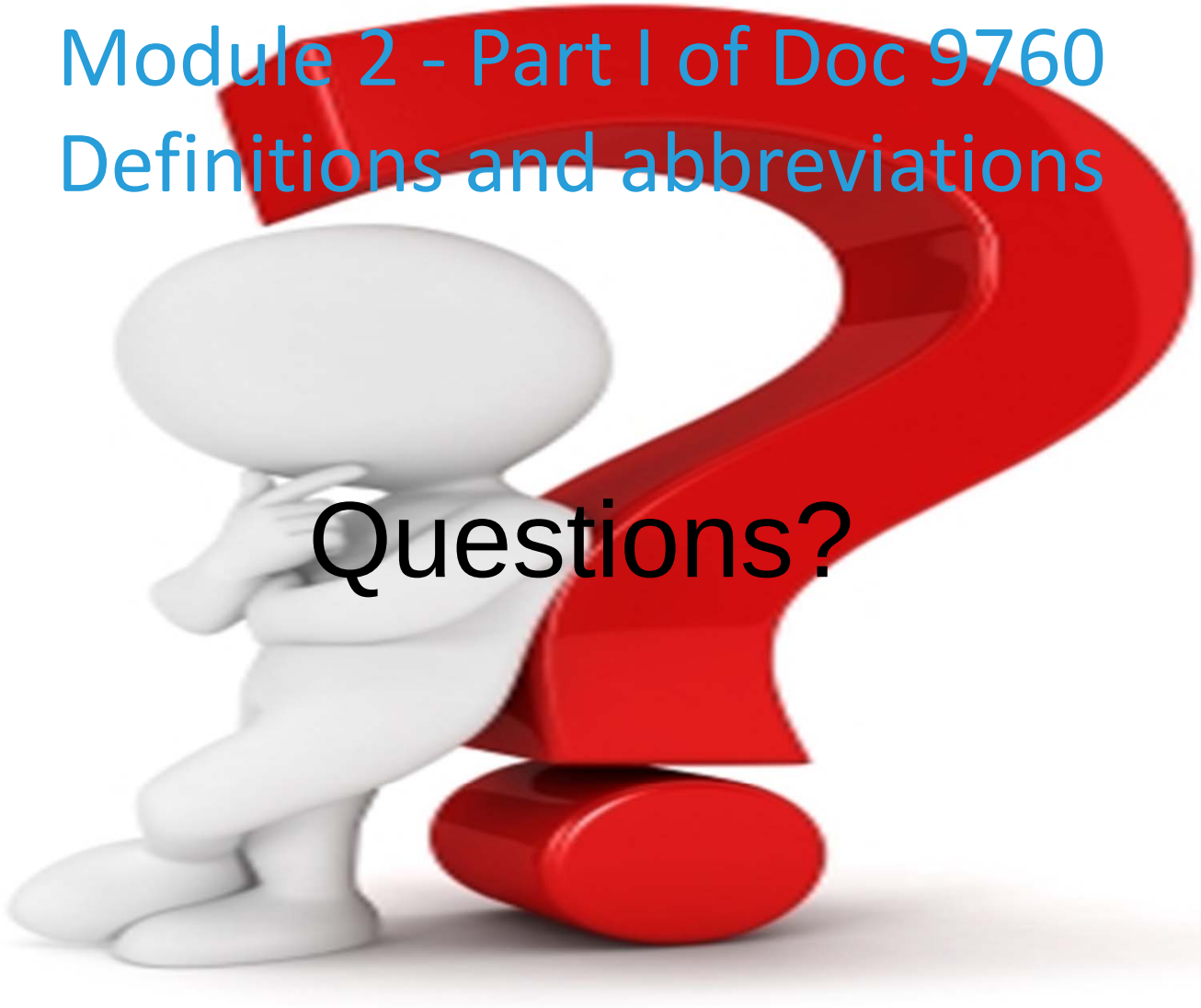
AD	Airworthiness directive
AED	Airworthiness engineering division
AFM	Aircraft flight manual
AID	Airworthiness inspection division
ALI	Airworthiness limitation items
AMO	Approved maintenance organization
AOC	Air operator certificate
APU	Auxiliary power unit
CAA	Civil aviation authority
C of A	Certificate of airworthiness
C of R	Certificate of registration
CDL	Configuration deviation list
CG	Centre of gravity
CMR	Certification maintenance requirements
DGCA	Director General of Civil Aviation

MCAI – Mandatory continuing airworthiness information
AMO – Approved maintenance organization
MTOM – Maximum take-off mass

Module 2 - Part I of Doc 9760
Summary

- ✓ Reviewed some definitions
- ✓ Discussed new definitions
- ✓ Abbreviations can be found after definitions

Module 2 - Part I of Doc 9760
Definitions and abbreviations



Questions?

Module 3 - Part II of Doc 9760

Part II. Airworthiness organizational structure and State responsibilities

Contents of Part II

Chapter 1: State's airworthiness responsibilities
Chapter 2: Primary aviation legislation
Chapter 3: State regulatory system
Chapter 4: Airworthiness organization

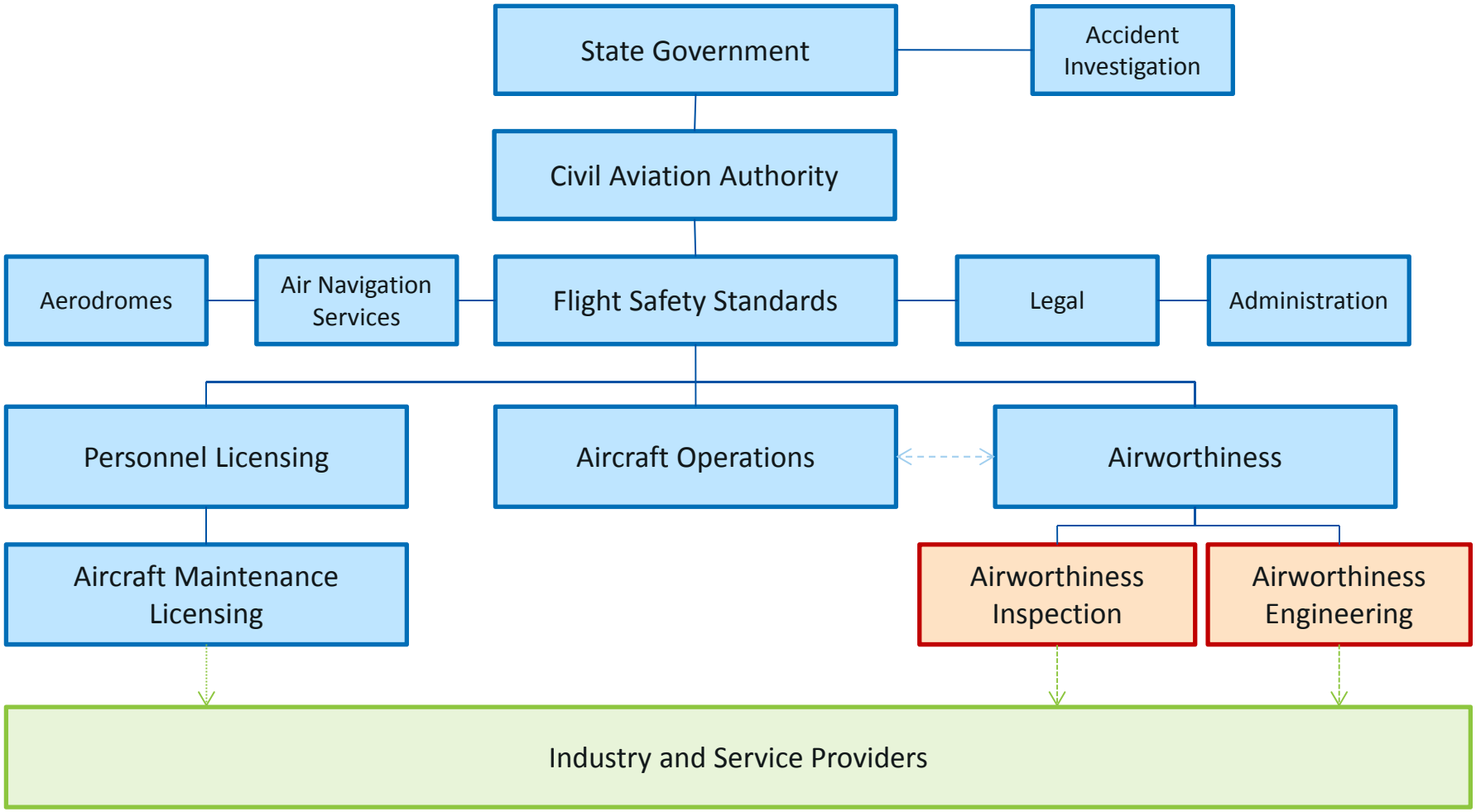
Module 3 - Part II of Doc 9760

This module….

- Setup of a typical Airworthiness Organization
- Some key responsibilities of an Airworthiness Organization
- Roles of the Airworthiness Engineering Division (AED) and Airworthiness Inspection Division (AID).
- Training requirements and qualifications for technical personnel
- Airworthiness technical library and records

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities



Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities

Key responsibilities include:

- Develop or adopt regulations to meet its obligations to the Convention on Civil Aviation
- Discharging of State responsibilities to:

✓ Meet the provisions of Annex 6 and 8 with regards to the airworthiness of aircraft

✓ Meet the provisions of Annex 6 and 8 with regards to the continuing airworthiness of aircraft

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities

- Develop and implement periodic surveillance programmes based on the complexity of its aviation industry:

✓ Conduct both periodic and unannounced surveillance of industry activities

✓ Evaluate accidents, incidents and service difficulty reports

✓ Take any timely enforcement action when necessary

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities

Airworthiness Engineering Division (AED)

- ✓ Approve design organizations
- ✓ Issue / validate / accept type certificates
- ✓ Support type certification activities
- ✓ Approve production organizations
- ✓ Issue production certificates
- ✓ Approve modifications and repairs
- ✓ Support the AID when required
- ✓ Ensure continuing airworthiness of aircraft

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities

Airworthiness Inspection Division (AID)

- ✓ Approve maintenance organizations
- ✓ Oversight of the maintenance and airworthiness aspects of air operators
- ✓ Registration of aircraft; maintains a Register of aircraft
- ✓ Issue or validate and renew Certificate of Airworthiness
- ✓ Approve maintenance programme
- ✓ Issue special flight approval
- ✓ Issue Export C of A, if required
- ✓ Support AED, when required
- ✓ Licensing tasks, where applicable

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities

Staff and inspector qualifications and experience

AED technical staff

- ✓ Knowledge and experience with design, manufacture and airworthiness certification
- ✓ Knowledge and skill to audit design and manufacturing organization
- ✓ Be able to apply design and manufacture standards relating to airworthiness certification to ensure the prototype or modified aircraft / parts meet airworthiness requirements
- ✓ Have good writing and interpersonal skills

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities

Staff and inspector qualifications and experience

AID Inspector

- ✓ Knowledge and experience related to aircraft continuing airworthiness management
- ✓ Experience in the performance of maintenance , repair and modification of aircraft, engines and aircraft systems or components
- ✓ Hold an aircraft maintenance licence
- ✓ Have good communication skills
- ✓ Have good interpersonal skills
- ✓ Knowledge and skill to audit air operator and AMO

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities

Training requirements for CAA technical staff

- Develop a training programme for staff
  - ✓ Initial training
  - ✓ OJT
  - ✓ Recurrent training
  - ✓ Technical training

- Ensure implementation of training

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities

Airworthiness technical library and records

- Reference material available for technical personnel
- Correspondence system on airworthiness matters
- Types of records to be kept
- Electronic records

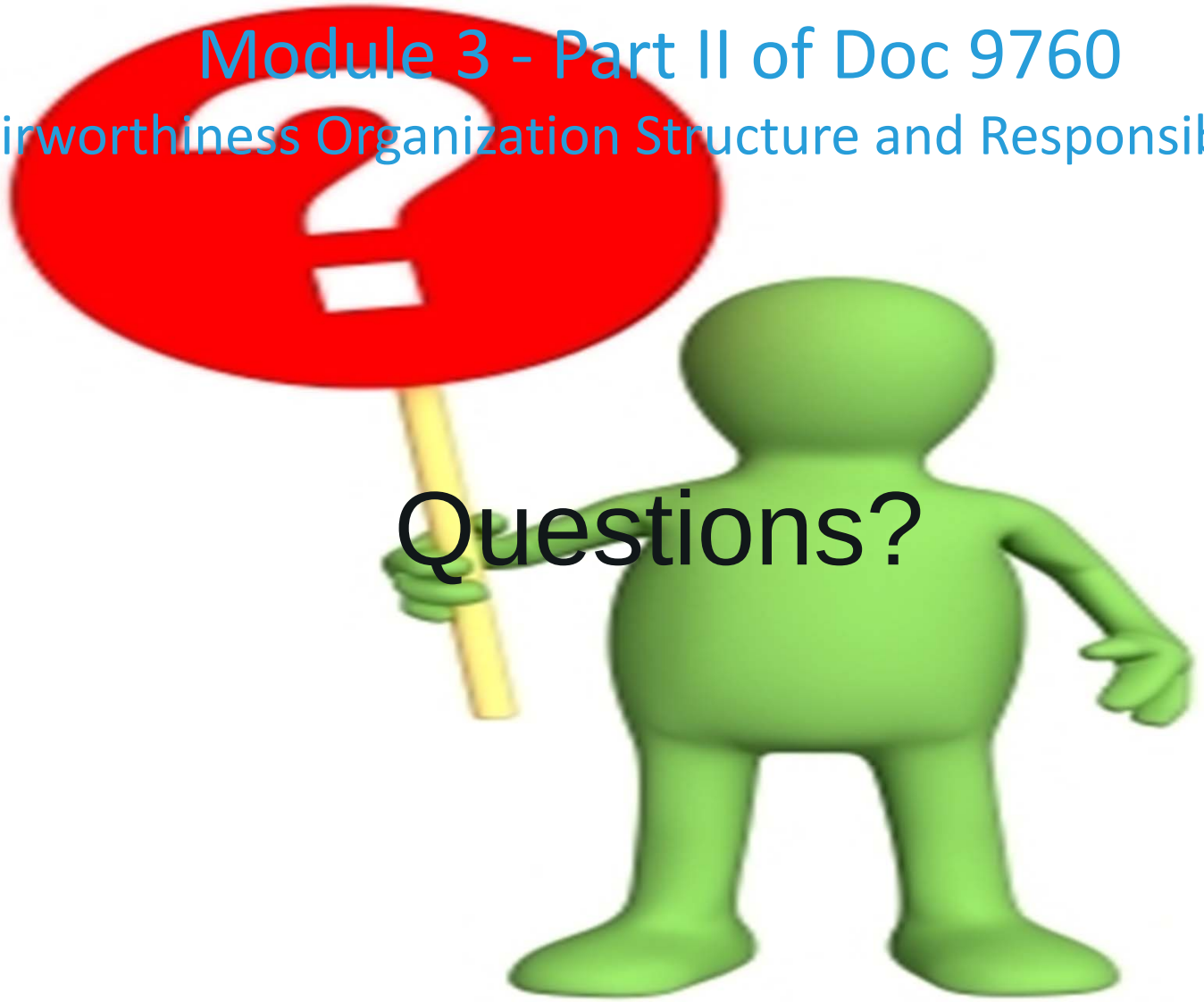
Module 3 - Part II of Doc 9760

Summary

- ✓ Brief description of the content of Part II
- ✓ Discussed a typical Airworthiness Organization setup.
- ✓ Look at some key responsibilities of an Airworthiness Organization.
- ✓ AED – responsibilities and staff
- ✓ AID – responsibilities and inspectors
- ✓ Qualifications / Training
- ✓ Airworthiness technical library and records

Module 3 - Part II of Doc 9760

Airworthiness Organization Structure and Responsibilities



Module 4 - Part III of Doc 9760

State of Registry

Part III. State of Registry

Content of Part III

Chapter 1: State airworthiness legislation system and organizational structure

Chapter 2: Registration of aircraft

Chapter 3: Aircraft noise certification

Chapter 4: Certificate of airworthiness

Chapter 5: Approval for special flights

Chapter 6: Airworthiness approval for export

Chapter 7: Aircraft maintenance

Chapter 8: Aircraft maintenance – modifications and repairs

Chapter 9: Continuing airworthiness of aircraft

Chapter 10: Approval of the maintenance organization

Module 4 - Part III of Doc 9760

State of Registry

This module….

- Key responsibilities of the State of Registry
- Information required in a aircraft register
- Maintenance programme
- Continuing airworthiness responsibilities of the State of Registry
- Issuing a Certificate of Airworthiness
- Approved Maintenance Organization
- Exercises on the process to issue a C of A and the evaluation of facilities as part of the process for approving a maintenance organization

Module 4 - Part III of Doc 9760

State of Registry roles and responsibilities

Article 12 of the Convention

Each contracting State undertakes to adopt measures to insure that every aircraft flying over and maneuvering within its territory and that every aircraft carrying its nationality mark, wherever such aircraft may be, shall comply with the rules and regulations relating to the flight and maneuver of aircraft there in force. Each contracting State undertakes to keep its own regulations in these respects uniform, to the greatest extent, with those established from time to time under this Convention.

Module 4 - Part III of Doc 9760

State of Registry roles and responsibilities

State of Registry responsibilities

- Develops and promulgates regulations:

✓ Registration of aircraft

✓ Airworthiness and continuing airworthiness of aircraft

✓ Noise certification

✓ Issuance, validation or acceptance of type certificates

Module 4 - Part III of Doc 9760

State of Registry roles and responsibilities

- Issues certificates and permits:

✓ Certificate of Registration

✓ Certificate of Airworthiness

✓ Noise certificate

✓ Special flight permit

✓ Export Certificate of Airworthiness

Module 4 - Part III of Doc 9760

State of Registry roles and responsibilities

- Approves

✓ Modification and repair

✓ Maintenance Organizations

✓ Maintenance programme

- Ensures the continuing airworthiness of aircraft
- Conducts surveillance
- Take appropriate enforcement action, when required.

Module 4 - Part III of Doc 9760

Continuing airworthiness responsibilities

State of Registry

a. Ensure that it informs the State of Design when it first enters on its register an aircraft of a particular type

b. Determine the continuing airworthiness of an aircraft in relation to the appropriate airworthiness requirements

c. Develop or adopt requirements to ensure the continuing airworthiness of aircraft during its service life including requirements that the aircraft:
- Continues to comply with the appropriate airworthiness requirements after a modification, repair or installation of a replacement part.
- Is maintained in an airworthy condition and in compliance with maintenance requirements of Annex 6.

d. Upon receipt of MCAI from State of Design adopt directly or assess the information received and take appropriate action.

e. Ensure the transmission to the State of Design all MCAI issued by the State of Registry in respect of a product or modification originated from that aircraft.

f. Ensure there exist a system whereby information on faults, malfunctions, defects and other occurrences that might cause adverse effects on continuing airworthiness is transmitted to the type design organization. If this is a modification, then the organization responsible for the design modification should be informed.

g. Each Contracting State should establish, in respect for large aircraft, the type of service information that is to be reported to its airworthiness authority by operators, organizations responsible for type design and maintenance organizations. Procedures for reporting this information should also be established.

Module 4 - Part III of Doc 9760

Aircraft Register

Annex 7, Chapter 6

Each Contracting State or common mark registering authority shall maintain a current register showing for each aircraft registered by the State or common mark registering authority, the information recorded in the certificate of registration

This would include:

- ✓ Nationality or common mark and registration mark
- ✓ Manufacture and manufacture's designation of aircraft
- ✓ Aircraft serial number
- ✓ Name and address of owner
- ✓ Date of issue

Module 4 - Part III of Doc 9760

Aircraft Register

*	State *or* Common mark registering authority Ministry Department or Service	*

CERTIFICATE OF REGISTRATION

1. Nationality or common mark and registration mark	2. Manufacturer and manufacturer's designation of aircraft	3. Aircraft serial no.
.....	.....	.....
.....	.....	.....

4. Name of owner .....

5. Address of owner .....

6. It is hereby certified that the above described aircraft has been duly entered on the .....

..... in accordance with the Convention on International Civil
(name of register)

Aviation dated 7 December 1944 and with the (†) .....

(Signature) .....

Date of issue .....

(†) Insert reference to applicable regulations.

*

* For use by the State of Registry or common mark registering authority.

Module 4 - Part III of Doc 9760

Maintenance programme

Maintenance Programme

An approved maintenance programme is required for each aircraft type. The information in a maintenance programme should contain at least the following:

- ✓ Maintenance tasks and the intervals at which these are to be performed
- ✓ When applicable, a continuing structural integrity programme
- ✓ Procedures for changing and deviating from the above
- ✓ When applicable, conditioning monitoring and reliability programme descriptions of aircraft systems, components and engines.

Maintenance tasks and that have been specified as mandatory in the approval of the type design should be identified as such in the maintenance programme.

Module 4 - Part III of Doc 9760

Certificate of Airworthiness

Article 31:

Every aircraft engaged in international navigation shall be provided with a valid Certificate of Airworthiness issued or rendered valid by the State in which the aircraft is registered

Annex 8, Part II, Para 3.2.1:

A Certificate of Airworthiness shall be issued by a Contracting State on the basis of satisfactory evidence that the aircraft complies with the design aspects of the appropriate airworthiness requirements

Module 4 - Part III of Doc 9760

Certificate of Airworthiness

A Certificate of Airworthiness shall be:

- ✓ Issued or
- ✓ Validated

States should develop regulations and procedures for:

- ✓ The issuance of a C of A
- ✓ The validation of a C of A
- ✓ The renewal of a C of A and
- ✓ The delegation for the issuance or renewal of a C of A

Module 4 - Part III of Doc 9760

Certificate of Airworthiness

State of Registry has to ensure that the design of the aircraft meets the appropriate airworthiness requirements. This can be done through:

- ✓ Type Certification
  - Full certification exercise
- ✓ Type Validation
  - certification review to the differences that exist between the State of Registry and State of Design
- ✓ Type Acceptance
  - recognition and direct acceptance of type certification already done by State of Design

Module 4 - Part III of Doc 9760

Certificate of Airworthiness

Application for the issue of C of A:

- Review application form
  - ✓ Duly completed and submitted with all supporting documents
- Identify aircraft configuration
  - ✓ To identify which components and changes to the type design have been made
    - For new aircraft, manufacturer should identify any changes
    - For old aircraft, records from previous State that issued the C of A
- Review documentation
  - ✓ AFM
  - ✓ Maintenance programme
  - ✓ Status of maintenance tasks with respect to the maintenance programme
  - ✓ Certification of any major repairs or modifications
  - ✓ Status of MCAI compliance mandated by the State of Registry
  - ✓ Mass and balance report together with equipment list
  - ✓ Aircraft and engine or propeller log books and maintenance records
  - ✓ Records that demonstrate the origin of parts that were installed new or repaired
  - ✓ Export C of A, if applicable

Module 4 - Part III of Doc 9760

Certificate of Airworthiness

Application for the issue of C of A (cont):

- Inspection of aircraft
  - ✓ Exterior
    - Damage to aircraft
    - Verify major modifications and repairs
    - Aircraft, engines / propellers identification plates
    - Components serial numbers conformity with aircraft records
  - ✓ Interior
    - Conformity of aircraft interior configuration, emergency and safety equipment
    - Markings and placards location and language
    - Additional markings as required by local regulations

Note: *All non-conformities observed should be reported to the applicant in writing. The C of A is only issued after all non-conformities are satisfactorily addressed.*

Module 4 - Part III of Doc 9760

Certificate of Airworthiness

Issuance of a C of A

- ✓ The aircraft must be registered in the State.
- ✓ Application form completed and signed by owner or appropriately delegated person on behalf of the operator.
- ✓ Particulars of all work done to restore the aircraft to an airworthy condition.
- ✓ Full particulars of work done should be entered in the appropriate log book and a maintenance release should be completed and the aircraft certified airworthy by an organization or suitably authorized person.
- ✓ An organization or suitably qualified person should certify the aircraft airworthy.
- ✓ All MCAI and other applicable requirements are carried out and certified.
- ✓ Issue C of A when all requirements are met.

Note: The C of A is only issued after all non-conformities are satisfactorily addressed.

Module 4 - Part III of Doc 9760

Certificate of Airworthiness

Continuing validity of C of A

Types of C of A

- ✓ C of A with an expiring period of validity
- ✓ C of A with a non-expiring period of validity

Module 4 - Part III of Doc 9760

Certificate of Airworthiness

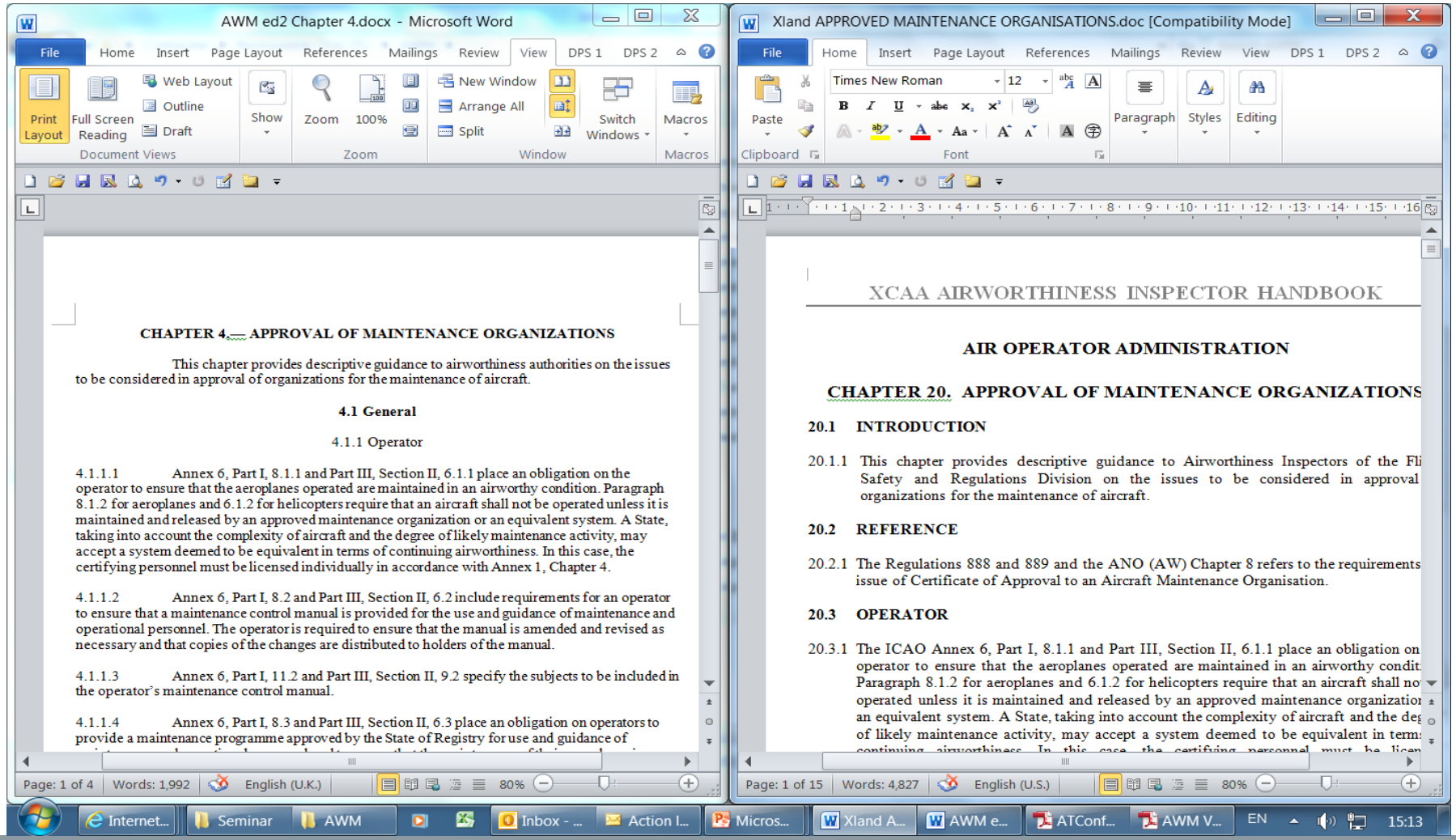
Continuing validity of C of A

A C of A becomes invalid(not in force):

- ✓ The aircraft does not conform with the type design approved by the State of Registry.
- ✓ The aircraft is not maintained in an airworthy condition

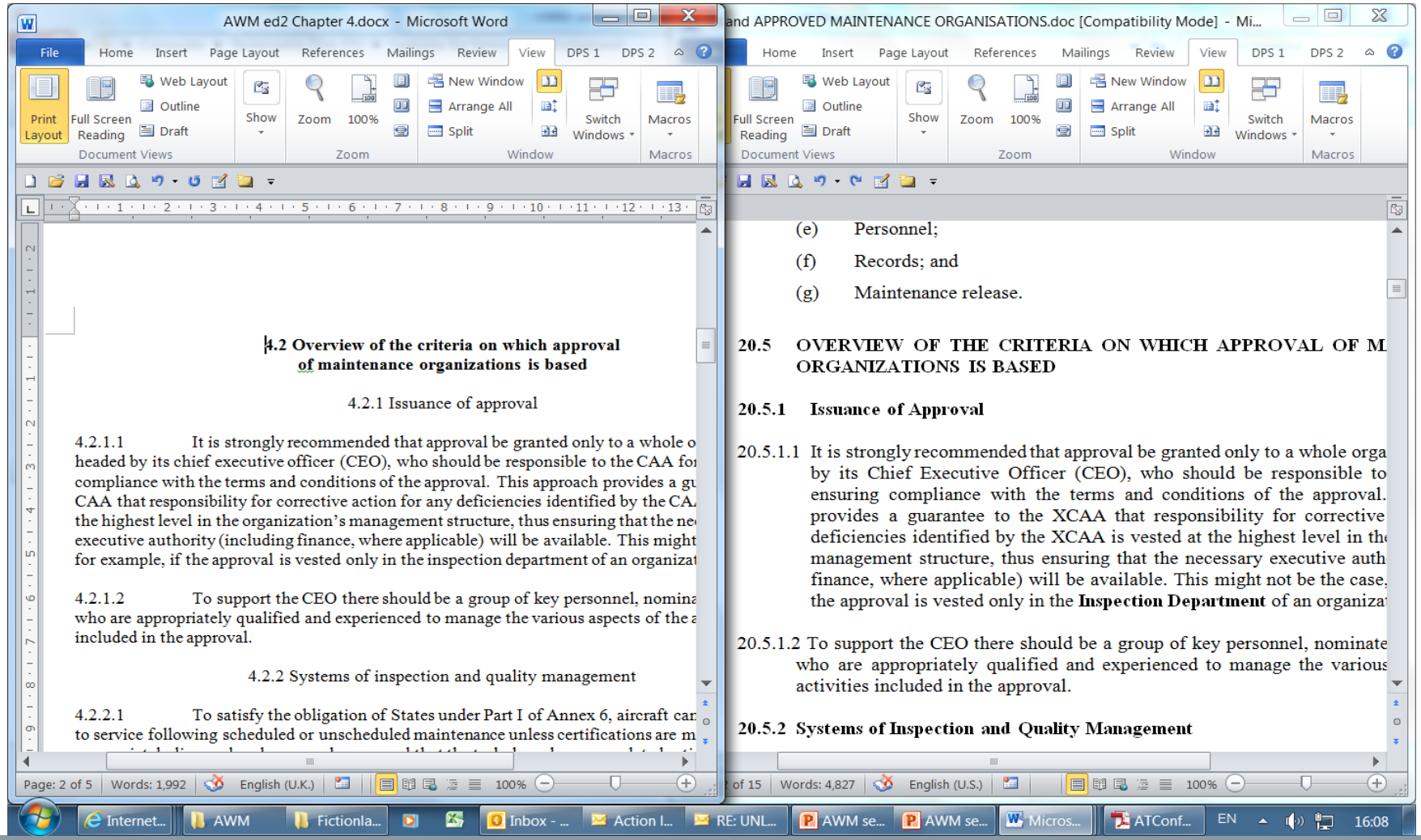
Module 4 - Part III of Doc 9760

Exercise - Example



Module 4 - Part III of Doc 9760

Exercise - Example

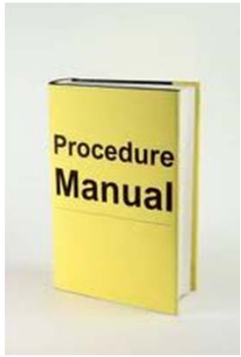


Part III – State of Registry

Exercise

FictionLand's procedure for processing an application for a C of A.

1. Review the procedure
2. Provide your comments
3. Propose areas of improvement



Part III – State of Registry

Approved Maintenance Organization

Aeroplane / Helicopter Maintenance

Annex 6 Part I Chapter 8 and Annex 6 Part III Section II Chapter 6:

"An operator shall not operate an aeroplane / helicopter unless it is maintained and released to service by an organization approved in accordance with 8.7 (AMO), or under an equivalent system, either of which shall be acceptable to the State of Registry"

Part III – State of Registry

Approved Maintenance Organization

Annex 6, Part 1, 8.1.3:

"When the State of Registry accepts an equivalent system, the person signing the maintenance release shall be licensed in accordance with Annex 1"

Annex 1, 4.1:

"An applicant shall, before being issued with any licence or rating……., meet such requirements with respect of age, knowledge, experience and where appropriate, medical fitness and skill, as are specified for that licence or rating."

- Para 4.2.1. provides the requirements for age, knowledge, experience and skill

Part III – State of Registry

Approved Maintenance Organization

Application process for a maintenance organization approval (5 phases):

1. Pre-application
2. Formal application
3. Document evaluation
4. Demonstration and inspection
5. Certification

Part III – State of Registry
Approved Maintenance Organization

Pre-application phase

- ✓ Face to face meeting
- ✓ Applicant explains its intent and make any clarifications
- ✓ CAA to provide guidance, approximate time and cost for the certification and standard information package
- ✓ Agree on the procedures and a timeline for the certification process
- ✓ Identify focal persons

Part III – State of Registry

Approved Maintenance Organization

Formal application phase

- Submission of application:

✓ Application form and supporting attachments
  - schedule of events
  - statement of compliance

✓ Documents to be submitted
  - maintenance organization procedures manual (MOPM)
  - safety management system, if separate from MOPM
  - quality assurance system, if separate from MOPM

✓ Applicable application fees

Part III – State of Registry
Approved Maintenance Organization

Formal application phase

- Acceptability of formal application
  - ✓ Ensure the application package is complete

- Formal application meeting
  - ✓ First formal meeting between the CAA and key management personnel of the applicant.
  - ✓ Followed by a formal written acceptance of application.

Part III – State of Registry

Approved Maintenance Organization

Document evaluation phase

Ensure the documents submitted are complete and meet the regulatory requirements

The maintenance organization's procedures manual (as required in Annex 8, Part I, Chapter 8.7.2) should include:

- ✓ Scope of work to be included in the terms of approval
- ✓ Organization's procedures and quality or inspection system
- ✓ Organization's facilities
- ✓ Names and duties person or persons responsible to ensuring the organization is in compliance with the requirements for an AMO
- ✓ Procedures to establish the competence of maintenance personnel

Part III – State of Registry
Approved Maintenance Organization

Document evaluation phase

Maintenance organization's procedures manual (cont):

- ✓ Method used for the completion and retention of maintenance records
- ✓ Procedures for preparing and signing the maintenance release
- ✓ Personnel authorized to sign the maintenance release
- ✓ Additional procedures to comply with operator's maintenance procedures
- ✓ Procedures for reporting service information
- ✓ Procedures to receive, assess, amending and distributing all necessary airworthiness data

Part III – State of Registry
Approved Maintenance Organization

Demonstration and inspection phase

To ensure that the applicant is capable to execute the scope of work applied for.

What to look at?

- Facilities

✓ Facilities and working environment is appropriate for the scope of work to be performed

✓ Technical data, equipment tools and material to perform the work

✓ Proper storage facilities for parts, equipment, tools and material

Part III – State of Registry

Approved Maintenance Organization

Demonstration and inspection phase

- Personnel

✓ Key person or persons whose responsibilities include ensuring that the maintenance organization complies with the requirements

✓ The necessary personnel to plan, perform, supervise, inspect and release work to be performed

✓ Training policy and programme to include the relevant initial and recurrent training

- Records

✓ Process to retain maintenance records, work orders and task cards etc.

Note: All non-conformities observed should be reported to the applicant in writing for follow-up and corrective action.

Part III – State of Registry

Approved Maintenance Organization

Certification Phase

Inspector should compile a report for the issuance of an maintenance organization approval. The report should include:

- ✓ Complete application form
- ✓ All completed checklists used during the demonstration / inspection
- ✓ Inspection reports with proper closure to findings

  Note: Approval is only issued after all non-conformities are satisfactorily addressed.
- ✓ Other documentation to substantiate any recommendations made

Part III – State of Registry
Approved Maintenance Organization

Certification phase - Issuance of approval document

- Review report and recommendations

Note: Approval is only issued after all non-conformities are satisfactorily addressed

- The approval document should have at least :

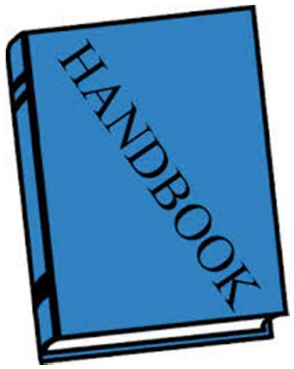
✓ Organization's name and location
✓ Date of issue and period of validity
✓ Terms of approval

Part III – State of Registry

Exercise

FictionLand's procedure for processing the evaluation of facilities as part of the process for approving a maintenance organization

1. Review the procedure
2. Provide your comments
3. Propose areas of improvement



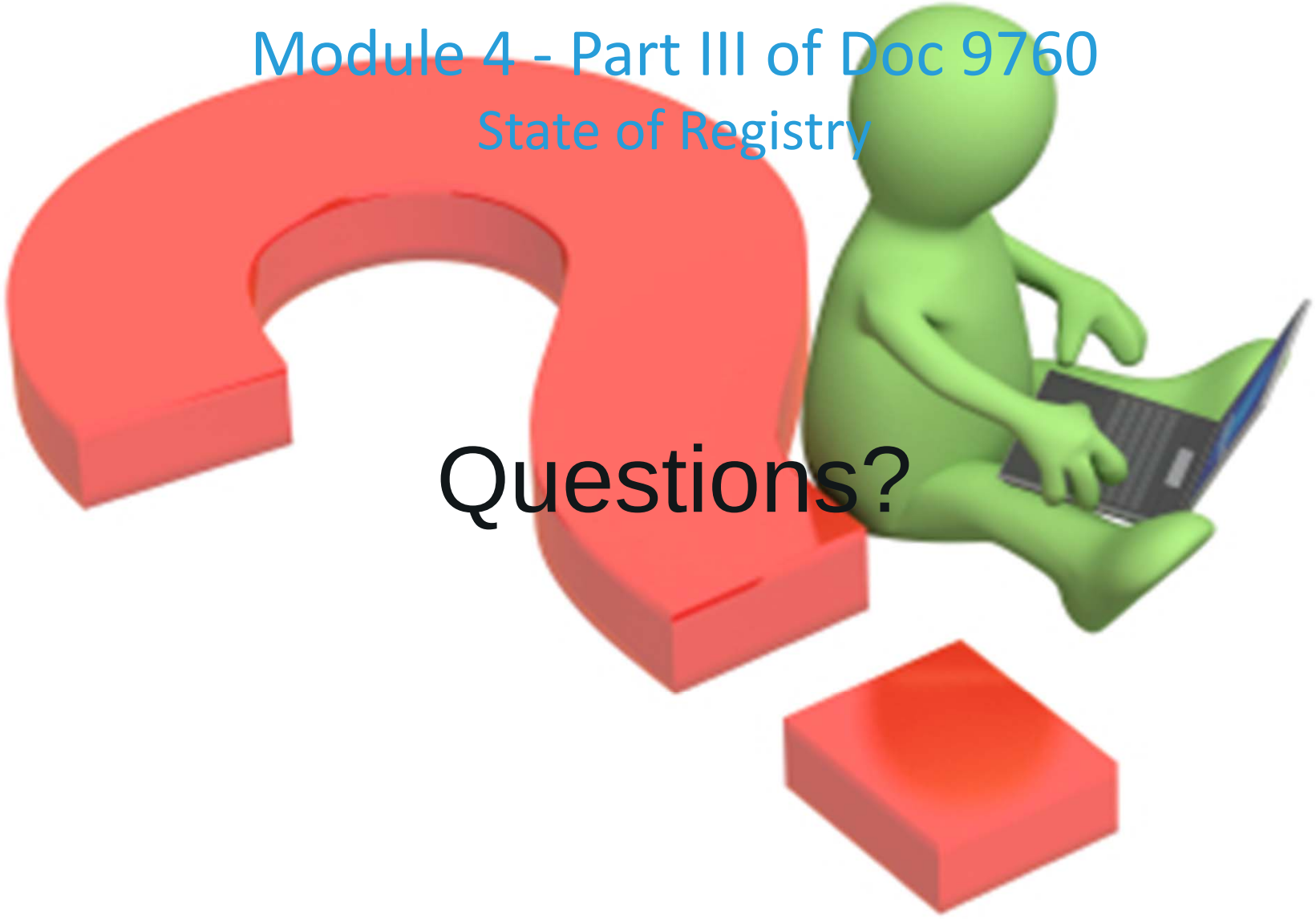
Module 4 - Part III of Doc 9760

Summary

- ✓ Brief description of the content of Part III
- ✓ Key responsibilities of the State of Registry
- ✓ Continuing airworthiness responsibilities of the State of Registry
- ✓ Information required in a Aircraft register
- ✓ Maintenance programme
- ✓ Issuing a Certificate of Airworthiness
- ✓ Approved Maintenance Organization
- ✓ Exercises on the process to issue a C of A and the evaluation of facilities as part of the process for approving a maintenance organization

Module 4 - Part III of Doc 9760

State of Registry



Module 5 - Part IV of Doc 9760

State of the Operator

Part IV. State of the Operator

Content of Part IV

Chapter 1: State airworthiness legislation system and organizational structure

Chapter 2: Air operator certificate – airworthiness aspects

Chapter 3: Aircraft maintenance – modifications and repairs

Chapter 4: Continuing airworthiness of aircraft

Chapter 5: Airworthiness requirements for extended diversion time operations

Chapter 6: Leasing arrangements

Module 5 - Part IV of Doc 9760

State of the Operator

This module…….

- Key responsibilities of the State of the Operator
- Continuing airworthiness responsibilities of the State of the Operator
- AOC certification – airworthiness aspects
- Contents of a Maintenance Control Manual (MCM)
- Extended Time Diversion Operations (EDTO)
- Exercise on the process of approving a Maintenance Control Manual

Module 5 - Part IV of Doc 9760

State of the Operator

Annex 6 Part I, Chapter 4 and Part III, Section II, Chapter 2:

The issue of an air operator certificate by the State of the Operator shall be dependent upon the operator demonstrating an adequate organization, method of control and supervision of flight operations, training programme as well as ground handling and maintenance arrangements consistent with the nature and extent of the operations specified.

Module 5 - Part IV of Doc 9760

State of the Operator roles and responsibilities

State of the Operator responsibilities

- Development and promulgation of regulations

✓ Operations of aircraft (including foreign aircraft)
✓ Airworthiness and continuing airworthiness of aircraft
✓ Acceptance of air operator's MCM

- Issues Air Operator Certificate

✓ Includes the operations specifications of the operator

- Approves MEL
- Conducts surveillance
- Takes appropriate enforcement actions, when required

Module 5 - Part IV of Doc 9760

Continuing airworthiness responsibilities

State of the Operator

Each Contracting State should establish, in respect for large aircraft, the type of service information that is to be reported to its airworthiness authority by operators, organizations responsible for type design and maintenance organizations. Procedures for reporting this information should also be established.

The operator of an large aeroplane / helicopter should monitor and assess maintenance and operational experience with respect to continuing airworthiness and provide the information as prescribed by the State of Registry and report through a system specified in Annex 8, Part II, 4.2.3f) and 4.2.4

The operator of an large aeroplane / helicopter should obtain and assess continuing airworthiness information and recommendations available from the organization responsible for the type design and should implement resulting actions considered necessary in accordance with a procedure acceptable to the State of Registry.

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Annex 6, Part I, Chapter 8.1 and Part III, Section II, Chapter 6.1 (Operator's maintenance responsibilities):

Operators shall ensure that, in accordance to procedures acceptable to the State of Registry:

a) *each aeroplane / helicopter they operate is maintained in an airworthy condition;*

b) *The operational and emergency equipment necessary for an intended flight is serviceable; and*

c) *The certificate of airworthiness of each aircraft they operate remains valid.*

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Annex 6, Part I, Chapter 8.1 and Part III, Section II, Chapter 6.1 (Operator's maintenance responsibilities):

An operator shall not operate an aeroplane / helicopter unless it is maintained and released to service by an organization approved in accordance with Annex 6, Part I, Chapter 8.7, or under an equivalent system, either of which shall be acceptable to the State of Registry.

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Certification of an operator (airworthiness aspects) is to determine the capability of the applicant to adequately maintain its aircraft in a airworthy condition.

This would include a detailed review and evaluation of the applicant's:

- ✓ Maintenance control manual
- ✓ Supplemental manual(W/B, EDTO etc)
- ✓ Maintenance programme
- ✓ Maintenance arrangements
- ✓ Staffing
- ✓ Facilities
- ✓ Training
- ✓ MEL (coordination with OPS)

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Application process for an AOC (5 phases):

1. Pre-application
2. Formal application
3. Document evaluation
4. Demonstration and inspection
5. Certification

(The 5 phase process drawn from Doc 8335- Manual of procedures for operations inspection, certification and continued surveillance)

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Pre-application phase

- ✓ Face to face meeting
- ✓ Applicant to explain intent and make clarifications
- ✓ CAA to provide guidance, approximate time and cost for the certification and an information package
- ✓ Agree on the procedures and a timeline for the certification process
- ✓ Identify focal persons

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Formal application phase

- Submission of application:
  - ✓ Application form and supporting attachments (to include)
    - schedule of events
    - statement of compliance
    - management structure and key staff members
    - information of aircraft to be operated
    - maintenance arrangements, if applicable
    - documents of purchase, leases, contracts or letters of intent
  - ✓ Applicable application fees

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Formal application phase

- Submission of application (cont):

  - ✓ Documentation to be submitted
    - maintenance control manual
    - maintenance programme for each type of aircraft
    - reliability programme, if applicable
    - quality assurance system
    - safety management system

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Formal application phase

- Acceptability of formal application
  - ✓ Ensure the application package is complete

- Formal application meeting
  - ✓ First formal meeting between the CAA and key management personnel of the applicant.
  - ✓ Followed by a formal written acceptance.

Module 5 - Part IV of Doc 9760
Air Operator Certificate (Airworthiness aspects)

Document evaluation phase

- Provisions to be approved / accepted
  - ✓ maintenance control manual
  - ✓ aircraft-specific maintenance programme
  - ✓ maintenance arrangements

Note: All non-conformities observed should be reported to the applicant in writing for follow-up and corrective action.

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

- Provisions that may require evaluation by more then one specialty group:

  - ✓ MEL
  - ✓ Special operations including PBN, Low visibility operations, Cat II and Cat III operations, EDTO and RVSM
  - ✓ SMS

Module 5 - Part IV of Doc 9760

Maintenance control manual (MCM)

Maintenance Control Manual (MCM)

- Procedures to ensure:
  - ✓ Each aircraft is maintained in an airworthy condition
  - ✓ Operational and emergency equipment is serviceable
  - ✓ C of A remains valid
- A description of the administrative arrangements between the air operator and the AMO
- A description of the maintenance procedures and the procedures for completing and signing a maintenance release when maintenance is based on a system other than that of an AMO

Module 5 - Part IV of Doc 9760

Maintenance control manual (MCM)

MCM (cont.)

- Names and duties of the person or persons to ensure that all maintenance is carried out in accordance with the MCM
- A reference to the maintenance programme for each aircraft type operated
- Methods used for completion and retention of maintenance records
- Procedures for monitoring, assessing and reporting maintenance experience to the State of Registry
- Procedures for the complying of service information reporting
- Procedures to assess continuing airworthiness information and implementing resulting actions

Module 5 - Part IV of Doc 9760
Maintenance control manual (MCM)

MCM (cont.)

- Procedures for implementing MCAI and process for using an alternate means of compliance
- A system of analysis and continued monitoring of the maintenance programme
- a description of aircraft types and models Procedures to ensure that unserviceable systems and components are recorded and rectified
- Procedures for completing and signing a maintenance release for aircraft and parts that have undergone maintenance

Module 5 - Part IV of Doc 9760

Maintenance control manual (MCM)

MCM (cont.)

- Procedures to ensure the aircraft is maintained in accordance to the maintenance programme
- Training programme for the maintenance personnel employed by the operator
- Operator's SMS
- Procedure to ensure modifications and repairs comply with State of Registry requirements
- Procedure for MCM revision and control

Note: The Operator to provide a copy of MCM to the State of Registry and State of the Operator, if applicable

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Demonstration and inspection phase

To demonstrate that the applicant has the required qualified staff, equipment and facilities to ensure that its aircraft remain in airworthy condition for the duration of its operational life.

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Demonstration and inspection phase

What to look at?

- ✓ MCM
- ✓ Maintenance programme
- ✓ Maintenance control organization
- ✓ Facilities
- ✓ Aircraft inspection

Note: All non-conformities observed should be reported to the applicant in writing for follow-up and corrective action.

Module 5 - Part IV of Doc 9760

Air Operator Certificate (Airworthiness aspects)

Certification Phase

AID inspector should submit a report to the project manager with the recommendations as to the applicant's ability to conduct safe operations. The report should include:

- ✓ All checklists used during the demonstration / inspection
- ✓ Inspection reports with proper closure to findings
- ✓ Other documentation to substantiate the any recommendations made

Note: All non-conformities observed should addressed before the issuance of the approval document

Module 5 - Part IV of Doc 9760

Extended Diversion Time Operations (EDTO)

Extended Diversion Time Operations (EDTO)

Any operation by an aeroplane with two or more turbine engines where the diversion time to an en-route alternate aerodrome is greater than the threshold time established by the State of the Operator.

Module 5 - Part IV of Doc 9760
Extended Diversion Time Operations (EDTO)

Background:

- ✓ Initial State Letter circulated in 2007 (ref SP 59/4-07/47)
- ✓ Special Operations Task Force (SOTF) set-up in 2008
- ✓ Second State Letter, with revised EDTO provisions circulated in June 2011
- ✓ 7 Mar 2012: Amendment 36 to Annex 6 was adopted by Council
- ✓ 16 July 2012: Effective date.
- ✓ 15 Nov 2012: Applicable date

Module 5 - Part IV of Doc 9760

Extended Diversion Time Operations (EDTO)

EDTO is an evolution of ETOPS

- Based on existing ETOPS provision
- Applies to all commercial aeroplanes
- Addresses systems that could force an aeroplane to divert:

  ✓ Engines (for twins)
  ✓ Loss of pressurization
  ✓ Time limited systems

- Requirements for 2 engines aeroplanes remains mostly unchanged

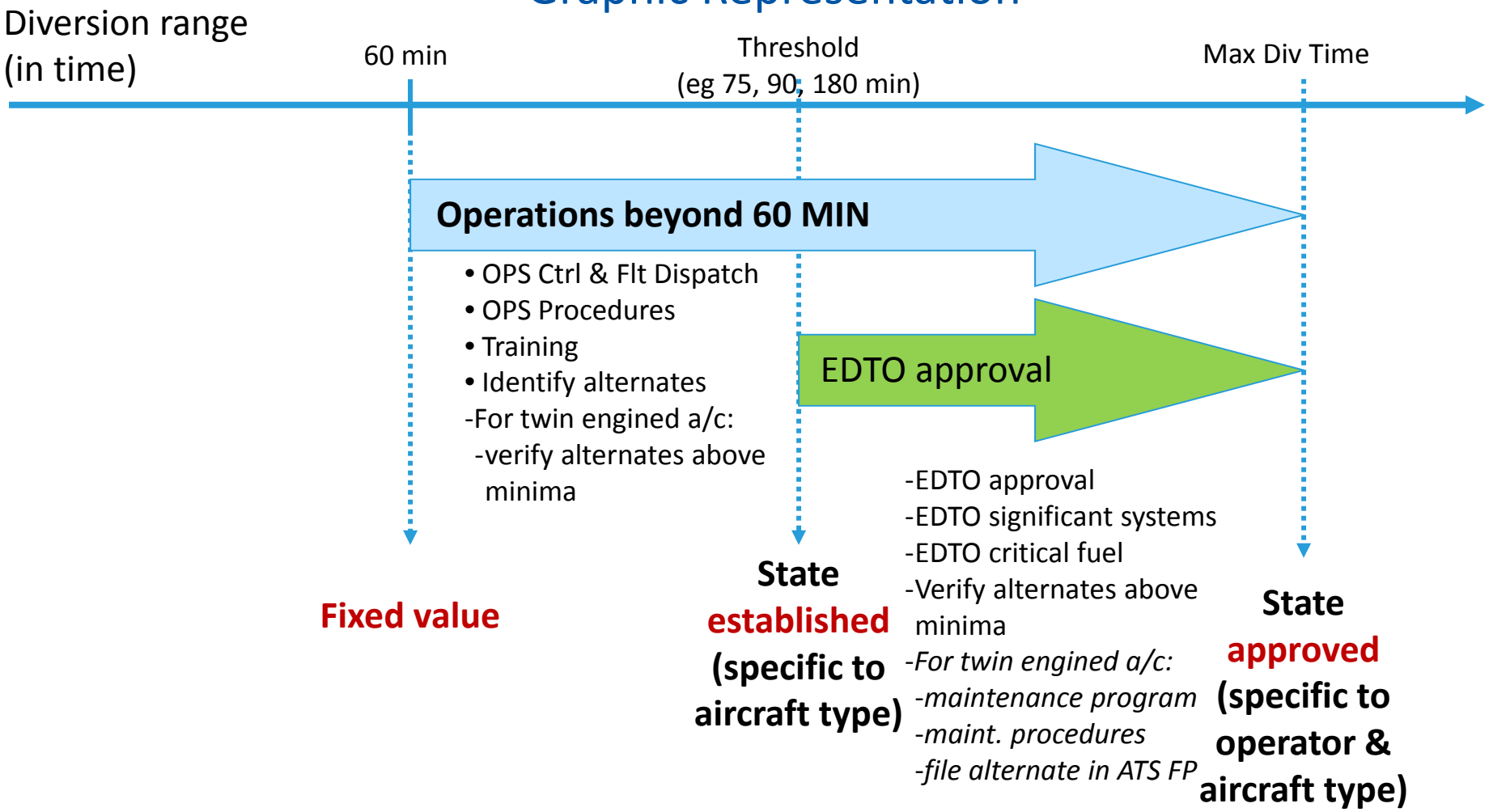
Module 5 - Part IV of Doc 9760
Extended Diversion Time Operations (EDTO)

- Requirements for 3 or more engines aeroplanes are based on good " industry practices"
  - ✓ No additional maintenance requirements nor additional certification requirements
  - ✓ Consideration of Time Limited System / identification of en-route alternates and verification of weather

- Guidance on EDTO also provided in Annex 6 Attachment D

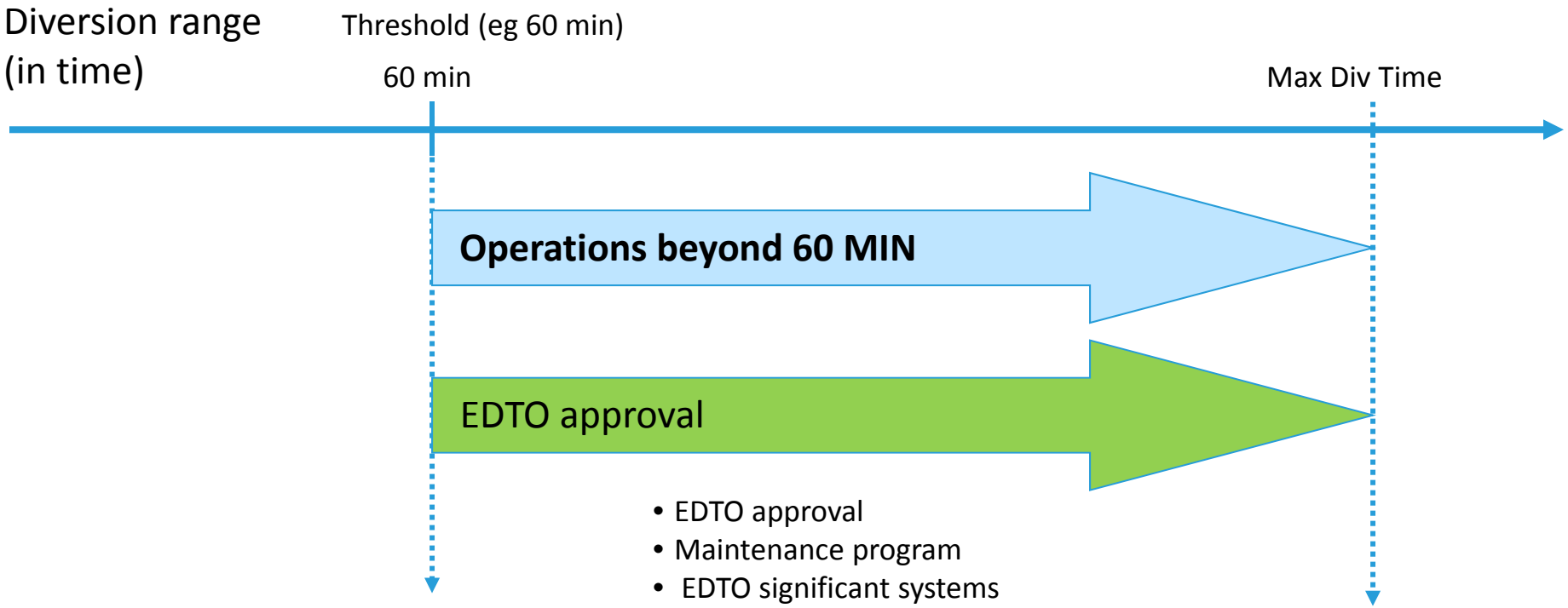
EDTO

Graphic Representation

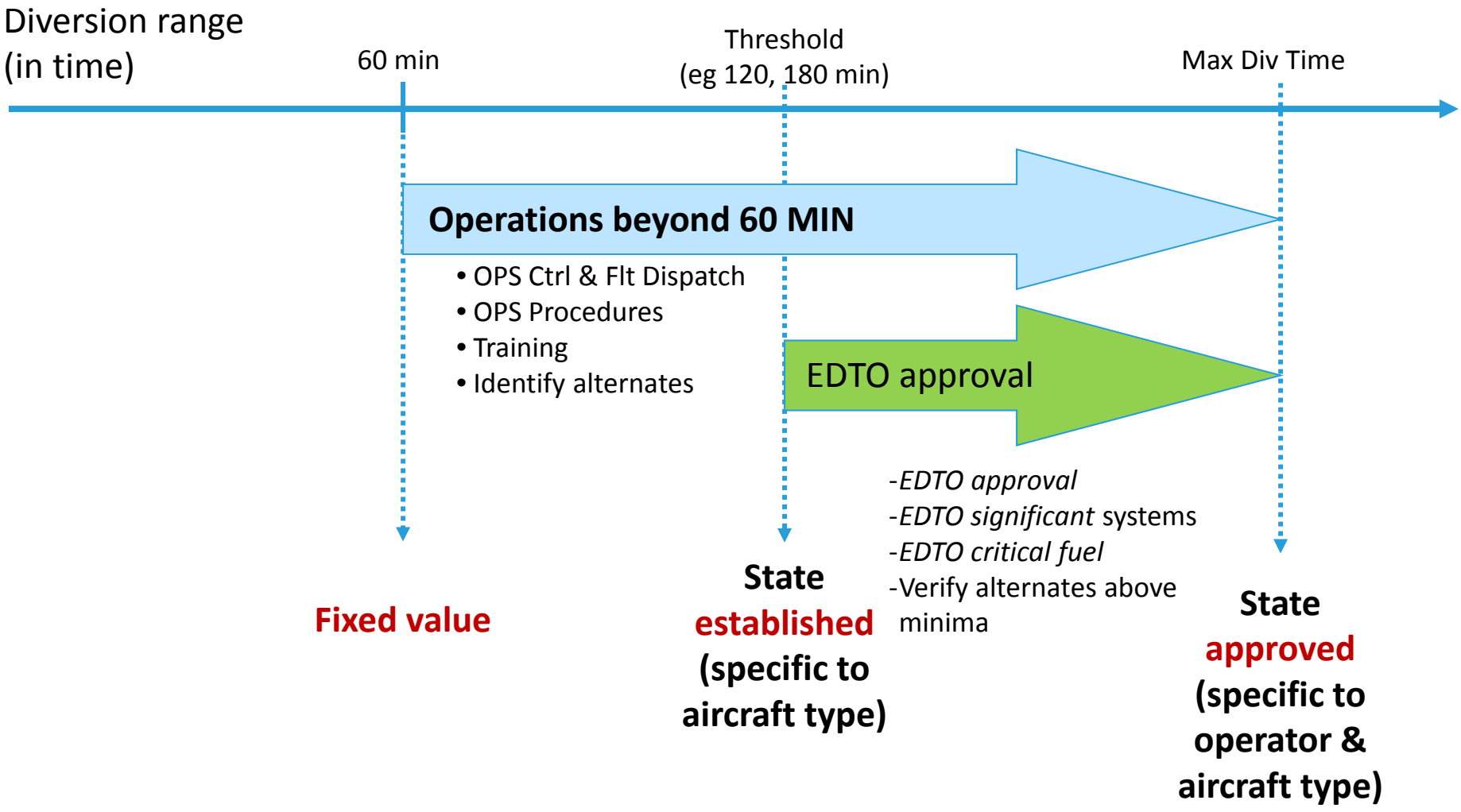


EDTO

Graphic Representation Twins



EDTO
Graphic Representation Tri's & Quad's



Module 5 - Part IV of Doc 9760

Extended Diversion Time Operations (EDTO)

Operators conducting operations beyond 60 mins to an en-route alternate aerodrome will require:

a. All en-route alternate aerodromes be identified

b. The most up-to-date information be provided to the flight crew on identified en-route alternate aerodromes, including operational status and meteorological conditions

c. Conditions at identified en-route alternate aerodromes in (2) above to be at or above the operator's established aerodrome operating minima for the operation at the estimated time of use (for 2 engines aeroplanes).

d. Also taking into account the operator's:

- ✓ Operational control and flight dispatch procedures
- ✓ Operational procedures
- ✓ Training programmes

Module 5 - Part IV of Doc 9760

Extended Diversion Time Operations (EDTO)

The EDTO threshold is not an operating limit. It is a flight time to an en-route alternate aerodrome, which is established by the State of the Operator. When establishing an EDTO threshold the State needs to consider that:

a. the airworthiness certification of the aeroplane type does not restrict operations beyond the threshold time;
b. specific flight dispatch requirements are met;
c. necessary in-flight operational procedures are established; and
d. the operator's previous experience on similar aircraft types and routes is satisfactory.

Module 5 - Part IV of Doc 9760

Extended Diversion Time Operations (EDTO)

An EDTO approval is required for operations beyond the established EDTO threshold.

An EDTO approval should take into consideration:

- ✓ the aeroplane's EDTO significant systems (limiting time limitation, if any, and relevant to that particular operation)
- ✓ the operator's operational and EDTO experience with the aeroplane type

Note: *The operator's approved maximum diversion time should not exceed the most limiting EDTO significant system time limitation identified in the aeroplane flight manual.*

Module 5 - Part IV of Doc 9760

Extended Diversion Time Operations (EDTO)

EDTO significant system

An aeroplane system whose failure or degradation could adversely affect the safety particular to an EDTO flight, or whose continued functioning is specifically important to the safe flight and landing of an aeroplane during an EDTO diversion.

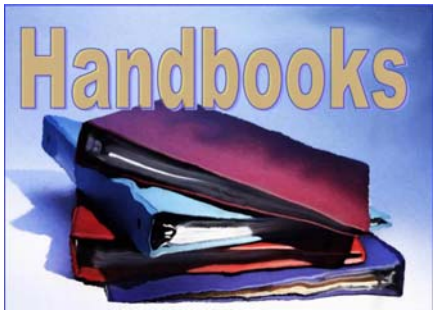
Includes:

- ✓ Propulsion systems
- ✓ Hydraulic systems
- ✓ Flight control systems
- ✓ Electrical power
- ✓ Equipment cooling systems
- ✓ Pressurization systems
- ✓ APU
- ✓ Cargo compartment fire suppression systems
- ✓ Fuel systems

Module 5 - Part IV of Doc 9760
Exercise

Exercise on Fictionland process to approve a MCM

1. Review the procedure
2. Provide your comments
3. Propose areas of improvement



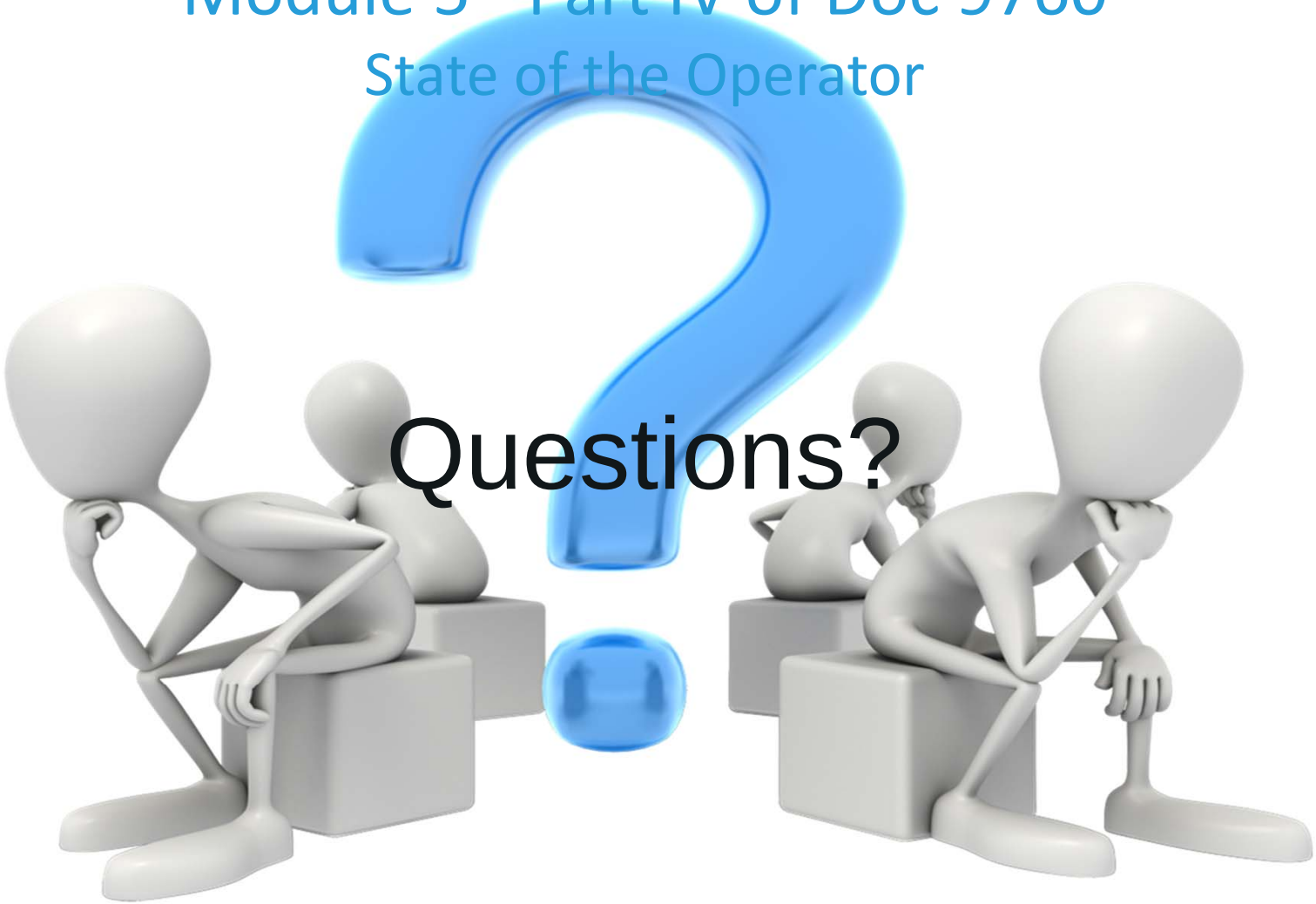
Module 5 - Part IV of Doc 9760

Summary

- ✓ Brief description of the content of Part IV
- ✓ Key responsibilities of the State of the Operator
- ✓ Continuing airworthiness responsibilities of the State of the Operator
- ✓ AOC certification – airworthiness aspects
- ✓ Contents of a Maintenance Control Manual
- ✓ Extended Time Diversion Operations (EDTO)
- ✓ Exercise on the process of approving a Maintenance Control Manual

Module 5 - Part IV of Doc 9760

State of the Operator



Module 5 - Part IV of Doc 9760

State of Design and State of Manufacture

Part V. State of Design and State of Manufacture

Content of Part V

Chapter 1: State airworthiness legislation system and organizational structure

Chapter 2: Type certification

Chapter 3: Aircraft maintenance – modifications and repairs

Chapter 4: Production approvals / certification

Chapter 5: Additional requirements when the State of Manufacture is not the State of Design

Chapter 6: Continuing airworthiness of aircraft

Chapter 7: Issuance of export certificates of airworthiness

Module 5 - Part IV of Doc 9760

State of Design and State of Manufacture

This module…..

- Key responsibilities of the State of the Design and State of Manufacture
- Continuing airworthiness responsibilities of the State of the Design and State of Manufacture
- Type certification activities
- Absence of or deficiency by a type certificate holder

Module 5 - Part IV of Doc 9760

State of Design

State of Design responsibilities

- Ensures the design aspects of the aircraft type comply with the Standards in Annex 8
- Issues type certificate
- Approves AFM, MMEL and CDL
- Approves modifications to the type certificate
- Transmits any ICA and MCAI necessary for the safe operation of the aircraft (including suspension and revocation of TC)
- Addresses the information received from State of Registry on faults, malfunctions, defects and other occurrences

Module 5 - Part IV of Doc 9760
State of Design

State of Design responsibilities (cont)

- When the State of Design and State of Manufacture is different ensures the organization responsible for the type design cooperates with the manufacturing organization in assessing the information received on the experience with operating the aircraft

- When the State of Design of an engine or propeller is not the State of Design of the aircraft, it transmits any continuing airworthiness information to the State of Design of the aircraft and any other Contracting State upon request

Module 5 - Part IV of Doc 9760

State of Manufacturer

State of Manufacture responsibilities

- Ensure that the production of aircraft and aircraft parts, including aircraft parts manufactured by contractors and/or suppliers, are airworthy

- Issue a production approval to the manufacturing organization upon satisfactorily evaluation of its processes and systems and inspection of the production facilities

Module 5 - Part IV of Doc 9760

State of Design continuing airworthiness responsibilities

State of Design

a. Transmit to every State that has advised that it has an aircraft on its register and any State on request, any applicable information that is necessary for the continuing airworthiness and safe operations of the aircraft. Also notify States of the suspension or revocation of a TC.

b. Ensure there is a system for:

- Receiving information on faults, malfunctions, defects and other occurrences that cause and might cause adverse effects on the continuing airworthiness of the aircraft
- Deciding if and when airworthiness action is needed
- Developing the necessary airworthiness actions
- Promulgating the information on those actions

c. Ensure a continuing SIP for aeroplanes over 5700kgs

d. Ensure where the State of Manufacture is not the State of Design, there is an agreement acceptable to both States to ensure that the type design organization cooperates with the manufacturing organization in assessing information received on experience with operating the aircraft.

Module 5 - Part IV of Doc 9760

State of Manufacture continuing airworthiness responsibilities

State of Manufacture

Ensure where the State of Manufacture is not the State of Design, there is an agreement acceptable to both States to ensure that the manufacturing organization cooperates with the type design organization in assessing information received on experience with operating the aircraft.

Module 5 - Part IV of Doc 9760

State of Design

Type certification activities

- ✓ Application for a type certificate
- ✓ Establishing the certification basis
- ✓ Establishing the means of compliance
- ✓ Demonstration of compliance
- ✓ Certifying the type design
- ✓ Post type certification activities

Module 5 - Part IV of Doc 9760

State of Design

Absence of or deficiency by a TC holder

- ✓ Cease to legally exist
- ✓ Abandon its responsibilities (surrender TC)
- ✓ Fail in its responsibilities (suspension / revoke TC)

What can a State of Design do?

- ✓ assume the limited responsibilities of the TC holder itself
- ✓ seek a new holder
- ✓ suspend or revoke the TC if no other options are available

Module 5 - Part IV of Doc 9760

State of Design

Suspension or revocation of a TC

- ✓ Annex 8 Part II 4.2.1.1 requires the State of Design to notify Contracting States of the suspension or revocation of a type certificate
- ✓ Annex 8 Part II 4.2.3 ultimately assigns the State of Registry the responsibility for determining the continuing airworthiness of the aircraft in its aircraft register.
- ✓ The State of Registry is required develop or adopt requirements necessary for ensuring the continuing airworthiness of the aircraft in its aircraft register during its service life.

Module 5 - Part IV of Doc 9760

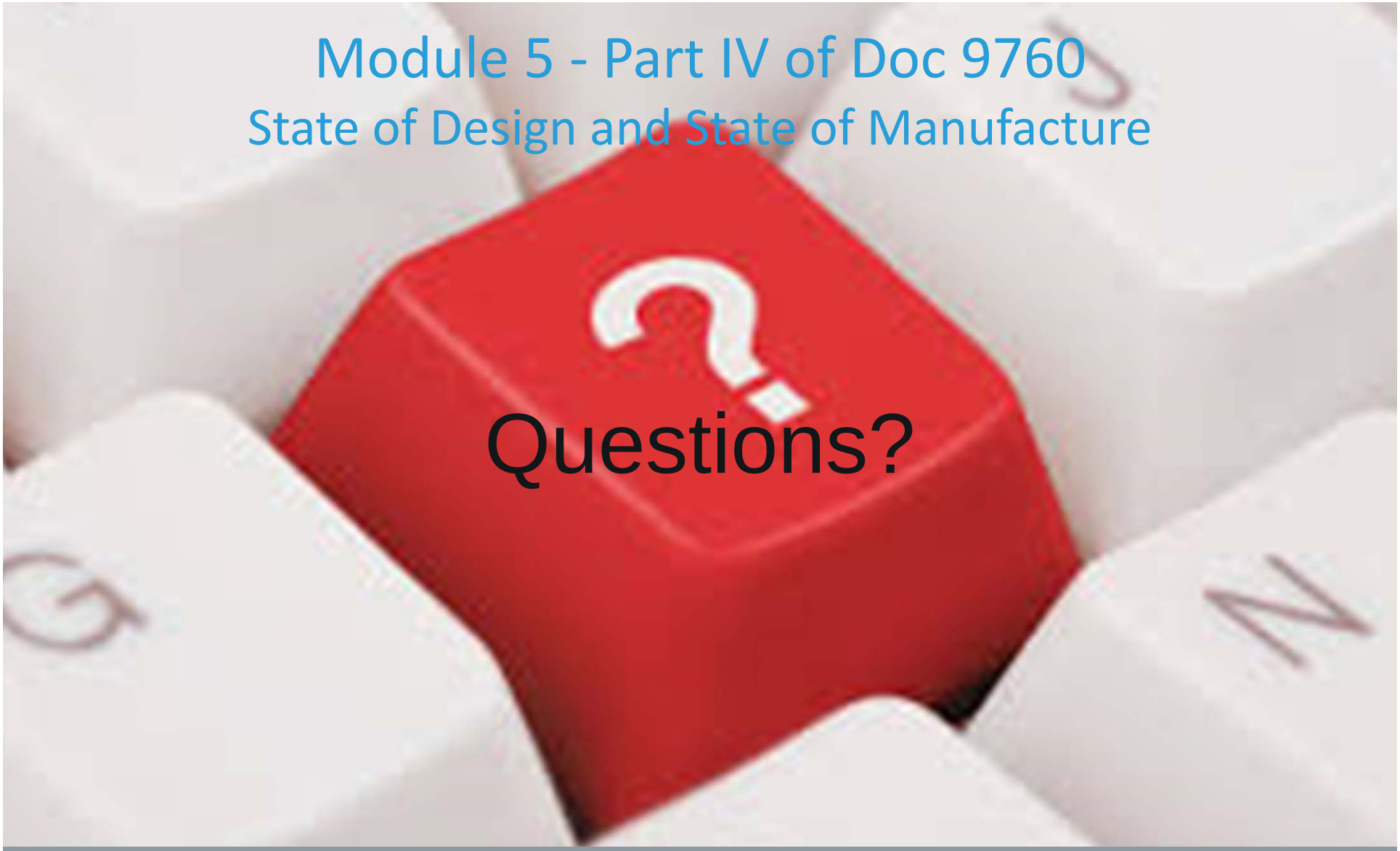
State of Design and State of Manufacture

Summary

- ✓ Brief description of the content of Part V
- ✓ Key responsibilities of the State of the Design and State of Manufacture
- ✓ Type certification activities
- ✓ Absence of or deficiency by a type certificate holder
- ✓ Continuing airworthiness responsibilities of the State of the Design and State of Manufacture

Module 5 - Part IV of Doc 9760

State of Design and State of Manufacture



Quiz

1. How many Parts are there in 3rd edition of Doc 9760?
   5 Parts
2. Where can you find guidance to the structure for an Airworthiness Organisation?
   Part II, Chapter 4
3. Whose responsibility is it to issue a Certificate of Airworthiness?
   State of Registry, Part III Chapter 4
4. A Maintenance Organisation approval is granted by whom?
   State of Registry, Part III Chapter 10
5. How many phases are in the process for the grant of an Air Operator Certificate?
   5 Phases, Part IV Chapter 2

Quiz

6. Who grants the approval for Extended Diversion Time Operations?

   State of the Operator, Part IV Chapter 5

7. What are the State of Registry's responsibilities for continuing airworthiness?

   Part III, Chapter 1

8. Which State approves Major repairs and modifications?

   State of Registry, Part III, Chapter 8

9. What are the State of Design's responsibilities for continuing airworthiness?

   Part V, Chapter 6

10. Whose responsibility is it to issue the Mandatory Continuing Airworthiness Instruction?

    State of Design, Part V, Chapter 6.9

    State of Registry, Part III, Chapter 9.5

Quiz

11. Whose responsibility is it to approve the Maintenance Programme?

    State of Registry, Part III, Chapter 7.3

12. Who approves the Reliability Programme?

    State of Registry, Part III, Chapter 7.4

13. Can an aircraft be registered in more then one State?

    No, Part III, Chapter 2.2.2

14. Can one airplane have a different States of Registry then the State of the Operator?

    Yes, Part IV, Chapter 6.1

Review of objectives

At the end of this seminar the participant would be able to identify, with reference to the ICAO Doc 9760:

- ✓ the structure of an Airworthiness Organization and the airworthiness responsibilities of States
- ✓ the roles and responsibilities of the *State of Registry, State of Operator and State of Design and Manufacture.*

Doc 9760 – What's next?

Revision 1 (possibly late 2015)

- ✓ Enhance guidance on the approval of AMOs
- ✓ More guidance provided to the State of Registry when type certificates are suspended, surrendered or revoked?
- ✓ Recognition of aircraft below 750kgs?
- ✓ New guidance on handling of security sensitive ADs?
- ✓ Additional guidance on reviewing the airworthiness provisions for RVSM approval
- ✓ Provide guidance on the maintenance of a aircraft register

Doc 9760 (Airworthiness Manual)

Queries and comments:

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ICAO

THANK YOU