SAFETY MANAGEMENT SYSTEM

FOR AIRCRAFT MAINTENANCE PERSONNEL (INITIAL)

AIROD Aerospace Technology Sdn Bhd

SMS PRE-TEST

QUIZ

Training Objective

To understand the:

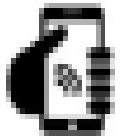
1. Safety Concept and the Evolution to current state.
2. Cause and contributing factors to an accidents.
3. Difference of Error & Violations and provide examples.
4. Safety Culture and its importance in the organization.
5. Relation between SMS & Management in terms of changes & challenges.
6. Hazards, Risk and Management principles
7. SMS Framework of the 4 components and 12 elements within.
8. Safety Policy & Objectives in an organization.
9. Safety Risk Management requirements & performances for service providers.
10. Safety Assurance oversight and context of collected data.
11. SMS Safety Promotion concept.
12. Stakeholders responsibilities, organization roles and CAAM expectation.

Table Of Content

Time Table

0900		Starts
1030		Morning Break
1045		Course Continue
1230		Lunch Break
1400		Course Continue
1530		Tea Break
1545		Course Continue
1730		Course End

Class Rules



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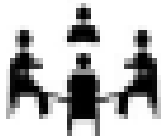
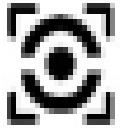


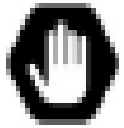
Participation in discussions and activities will enhance absorption.



Stay focused on course objectives.

Ask question at any time, this is your course please use it to your best advantage.

Treat all opinions with respect.



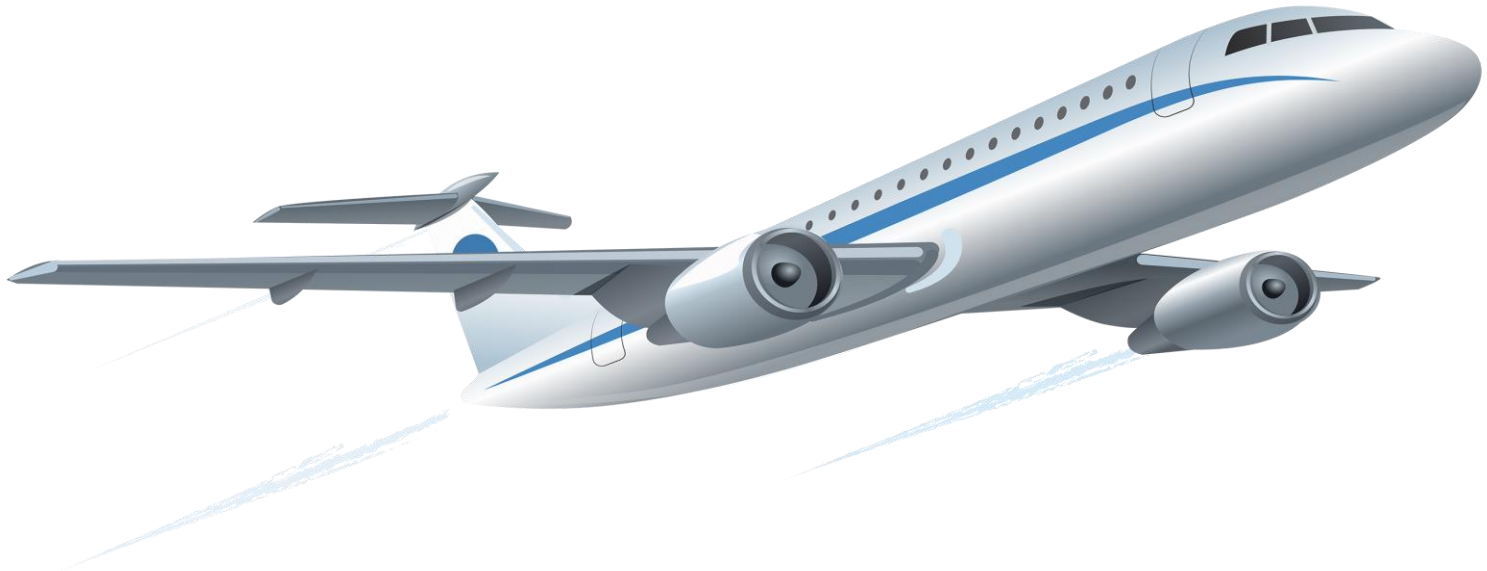
Avoid blaming others.

Self-Introductions

- Name
- Where do you work?
- How long have you worked here?

Module 1 – Sections

1) Legislative Framework
2) SMS Requirements
3) Global Aviation Safety Plan - GASP



OBJECTIVE

At the end of this module, You will be able to describe and explain the fundamental safety management concepts and principles from the Malaysian legislative frameworks, including MCAR 167, CAD 19 and ICAO Annex 19 on the Safety Management System (SMS)

Module 1 – Section 1 SMS

Legislative Framework

M’sian Aviation Legislative Framework

Act

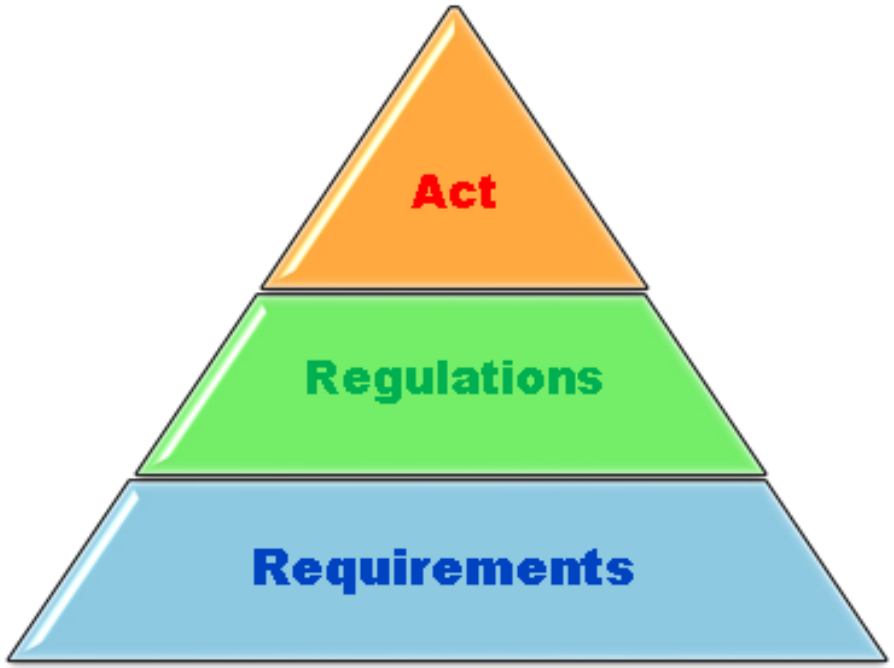
- *Civil Aviation Act 1969 [Act 3]*

Regulations

- *Civil Aviation Regulations 2016*

Requirements

- *Directive/Notice/Circular/Information*



Act of Parliament

- Civil Aviation Act 1969 [Act 3]
- Civil Aviation Authority of Malaysia Act 2017 [Act 788]
- Carriage by Air Act 1974 [Act 148]
- Civil Aviation Offences Act 1984 [Act 307]
- Airport and Aviation Services (Operating Company) Act 1991 [Act 467]
- International Interests in Mobile Equipment (Aircraft) Act 2006 [Act 659]

Subsidiary Legislations – Regulations

Pursuant to this power as vested by Parliament video section 3 of Act 3 in its present form, the Minister made the subsidiary legislations as follows:

- **Civil Aviation Regulations 2016**
- **Civil Aviation (Aerodrome Operations) Regulations 2016**
- **Civil Aviation (Security) Regulations 2019**
- **Civil Aviation (Fees and Charges) Regulations 2016**

Specific Operating Requirements

1.2.1 Civil Aviation Directives (CAD)

CAD are documents published by CAAM that contains the standards, requirements and procedures based mainly upon the standards and recommended practices (SARPs) stipulated in International Civil Aviation Organisation (ICAO) Annexes. The CADs expand the requirements outlined in the MCAR 2016.

1.2.2 Civil Aviation Circulars (CAC)

CAC are legally binding documents issued by CAAM that may supersede current published standards, requirements, procedures, or guidelines in the CADs/CAGMs. A circular will be valid until it is incorporated into CADs/CAGMs in the next planned revision cycles.

1.2.3 Civil Aviation Notices (CAN)

CAN are legally binding documents issued by CAAM of which its contents are not permanent in nature.

1.2.4 Safety Directives (SD)

SD are legally binding documents issued by CAAM in relation to any aspect of safety or security in civil aviation.

1.2.5 Safety Information (SI)

SI is issued to the public which are informative in nature which relates to aviation safety, for example – in-flight loss of control safety awareness or safety promotion.

1.2.6 Advisory Information (AI)

AI is issued to the public which are informative in nature and are non-regulatory.

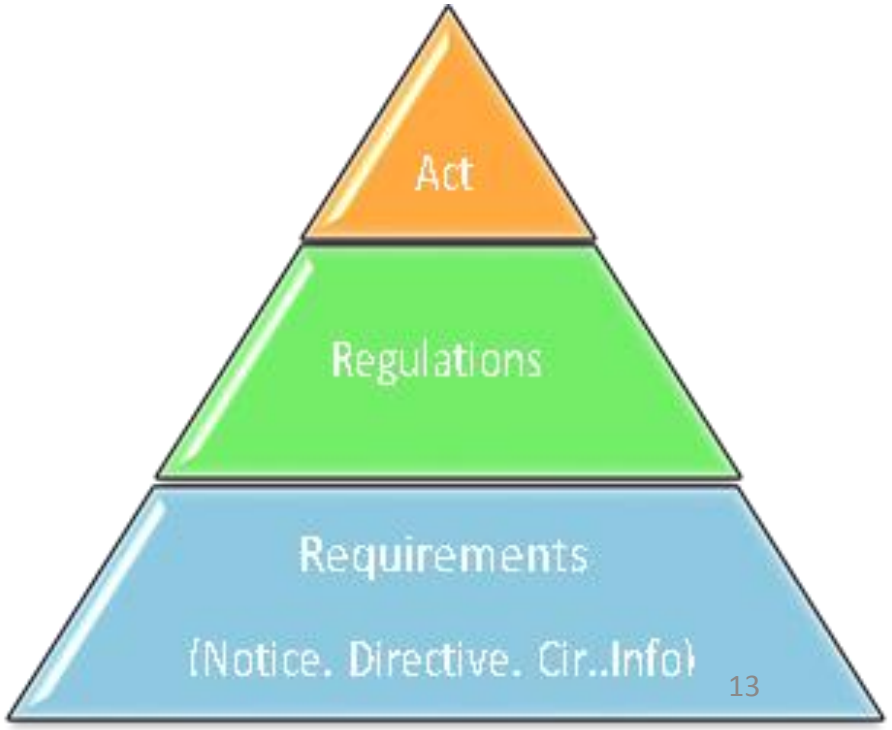
WHY? → **HOW?**

Section 3 of Civil Aviation Act 1969 – Power to give to the Chicago Convention and regulate civil Aviation.
Integrate SARPs into national legal framework

- Ratified the Chicago Convention on 07 Apr1958

- Article 37 of the Convention - **Adoption ofinternational standards and procedures**

*"… securing the highest practicable degree of **uniformity** in regulations, standards, procedures, and organization in relation to aircraft, personnel,.."*



Malaysia is subjected to ICAO Continuous Monitoring under Universal Safety Oversight Audit Programme (USOAP)

Obligations:

1. Completion and update of the:
   - Compliance Checklist
   - USOAP – CMA self-assessment
   - USOAP Audit

State Safety Oversight System

8 Critical Elements:

CE1 : Establishment of Primary aviation legislation
CE2 : Specific operating regulations,
CE3 : State system and functions,
CE4 : Qualified technical personnel,
CE5 : Technical guidance, tools and provision of safety-critical information;
CE6 : Licensing, certification, authorization and approval obligations,
CE7 : Surveillance obligations, and
CE8 : Resolution of safety issues.

ICAO SSP.AIR PQs – Airworthiness of Aircraft

PQ No.	Protocol Question	References in ICAO guidancematerial	SSP Component
SSP.AIR.01	What regulatory requirements have been promulgated by the State for approved maintenance organizations providing servicesto aircraft operators engaged in international commercial air transport (hereinafter referred to as AMOs) to implement a safetymanagement system (SMS) acceptable to the State?	SMM 8.4.7	State Safety Risk Management
SSP.AIR.02	What support has the State provided to AMOs for SMSimplementation?	SMM 8.3.8	State Safety Policy, Objectives and Resources
SSP.AIR.03	How does the State ensure that the personnel responsible forthe acceptance and monitoring of AMOs' SMS develop the required competencies?	SMM 8.3.7	State Safety Policy, Objectives and Resources
SSP.AIR.04	What guidance and tools has the State provided to its personnelon the initial acceptance and continuous surveillance of AMOs' SMS?	SMM 8.3.8	State Safety Policy, Objectives and Resources
SSP.AIR.05	How does the State determine the initial and continued acceptability of an AMO's SMS?	SMM 8.4.7	State Safety Risk Management
SSP.AIR.06	How does the State assess the effectiveness of the hazardidentification and risk management processes of AMOs?	SMM 8.4.7	State Safety Risk Management

ICAO SSP.AIR PQs – Airworthiness of Aircraft

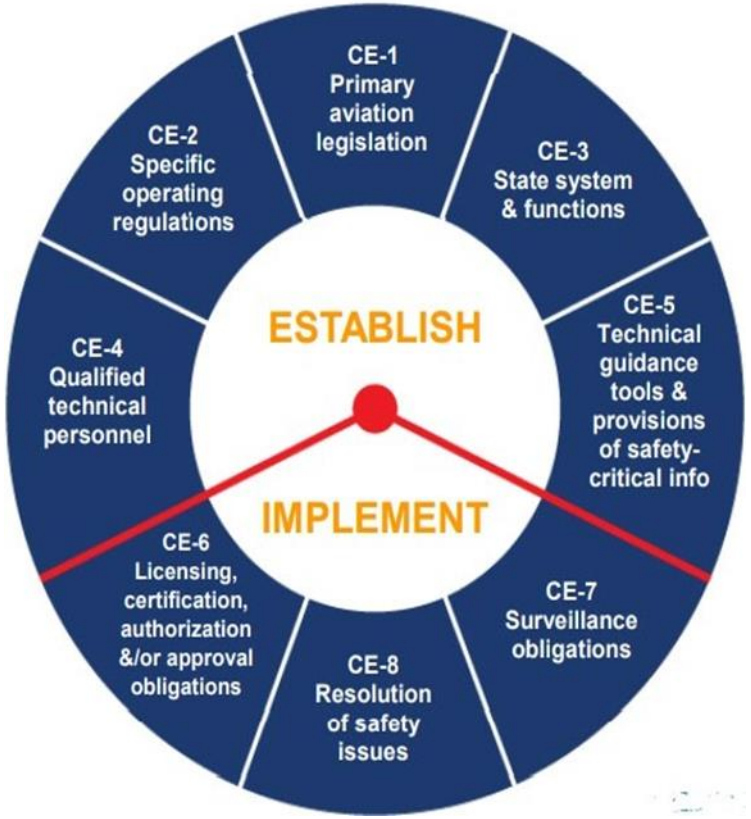
PQ No.	Protocol Question	References in ICAO guidance material	SSP Component
SSP.AIR.07	How does the State ensure that AMOs monitor and analyze safetydata to identify trends and take appropriate action when needed?	SMM 8.4.7	State Safety Risk Management
SSP.AIR.08	How does the State review and monitor safety performance indicators (SPIs), alert levels and target levels, when applicable, ofindividual AMOs?	SMM 8.4.7	State Safety Risk Management
SSP.AIR.09	How does the State prioritize inspections, audits and surveys ofAMOs, towards those areas of greater safety concern or need?	SMM 8.5.3	State Safety Assurance
SSP.AIR.10	How does the State use the safety performance-related information of its AMOs to support the monitoring of the State'ssafety performance?	SMM 8.5.5	State Safety Assurance
SSP.AIR.11	How does the State enable and promote the exchange of safetyinformation amongst AMOs and other sectors of civil aviation inthe State?	SMM 8.6	State Safety Promotion

OVERSIGHT SYSTEM

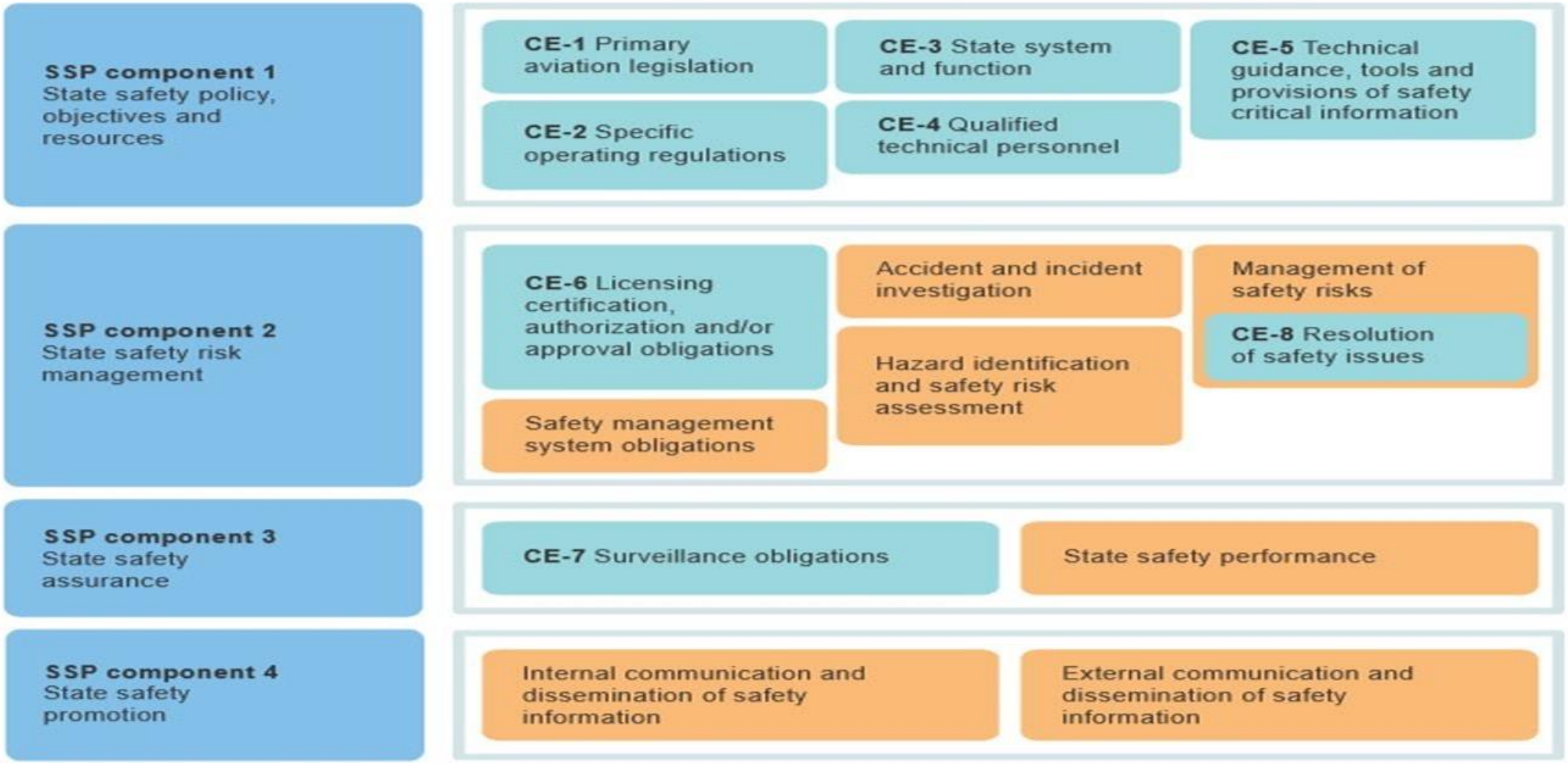
Safety Oversight: "A function performed by a State to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations."

[Annex 19 to the Chicago Convention —Safety Management (Second edition, July 2016)]

The State Safety Oversight (SSO) system CEs constitute the foundation of an SSP (State Safety Programme)



STATE SAFETY PROGRAMME



MCAR 2016

PART XXIII : SAFETY PROGRAMME AND SAFETY MANAGEMENT SYSTEM

Malaysian Safety Programme

166. The Secretary General of the Ministry of Transport shall establish the Malaysian Safety Programme for the management of civil aviation safety in Malaysia.

Obligations Implementation of SMS

- States shall require that the following service providers under their authority implement an SMS

a) Approved training organizations in accordance with Annex 1 that are exposed to safety risks related to aircraft operations during the provision of their services;

b) Operators of aeroplanes or helicopters authorized to conduct international commercial air transport, in accordance with Annex 6, Part I or Part III, Section II, respectively;

c) Approved maintenance organizations providing services to operators of aeroplanes or helicopters engaged in international commercial air transport, in accordance with Annex 6, Part I or Part III, Section II ,respectively;

d) Organizations responsible for the type design or manufacture of aircraft, engines or propellers in accordance with Annex 8;

e) Air traffic services (ATS) providers in accordance with Annex11; and

f) Operators of certified aerodromes in accordance with Annex 14, Volume I.

MCAR 2016

Safety management system

167. (1) A service provider shall establish a safety management system in accordance with the requirements as may be determined by the Director General.

(2) A safety management system established under subregulation (1) shall be acceptable to—

(a) in the case of an air traffic service provider, the Secretary General of the Minister of Transport; and

(b) in the case of a service provider other than an air traffic service provider, the Director General.

MCAR 2016 (A 2018) - Cont

Reg 167 (3) stated Service provider means **-**

a) an approved training organisation that are exposed to safety risks related to aircraft operations during the provision of their services;
b) a holder of air operator certificate issued by Authority;
c) an approved maintenance organisation providing services to the holder of air operator certificate issued by Authority;
d) any organisation responsible for the type design or manufacture of aircraft;
e) an air traffic control service provider;
f) a person licenced under the Malaysian Aviation Commision Act 2015 to operate an aerodrome;
g) any operator of an aeroplane registered in Malaysia with a maximum certificated take-off mass exceeding 5,700 kilogrammes or equipped with one or more turbojet engines used in any international general aviation operations; and
h) an approved maintenance organisation providing services for the operator of an aeroplane registered in Malaysia with a maximum certificated take-off mass exceeding 5,700 kilogrammes or equipped with one or more turbojet engines used in any international general aviation operations.

2.2.2 SMS Acceptance

The safety management established by a service provider shall be made acceptable to the relevant authorities in accordance with established technical requirements and procedures, in accordance with CAD 19 and CAGM 1902.

MODULE 1 – SECTION 2

SMS REQUIREMENT

ANNEX 19 –Safety Management

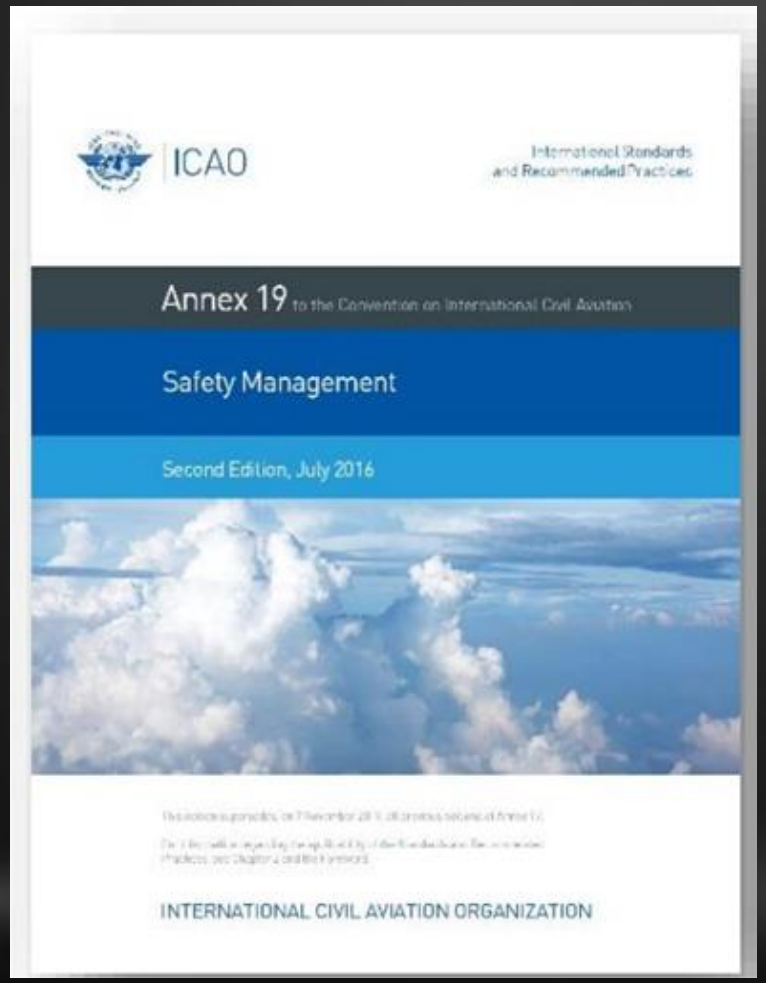


Table A. Amendments to Annex 19

Amendment	*Source(s)*	*Subject(s)*	*Adopted Effective Applicable*
1st Edition	Secretariat; first special meeting of the Safety Management Panel (SMP/SM/1)		25 February 2013 15 July 2013 14 November 2013
1 (2nd Edition)	First meeting of the Safety Management Panel (SMP/1) together with the 14th meeting of Airworthiness Panel Working Group of the Whole (AIRP/WG/WHL/14) and the Safety Information Protection Task Force (SIP TF) relating to safety management	Further development of safety management provisions and extension of safety management system (SMS) provisions to organizations responsible for the type design and/or manufacture of engines and propellers.	2 March 2016 11 July 2016 7 November 2019

CIVIL AVIATION DIRECTIVE 19

- Civil Aviation Directive 19 – Civil Aviation Safety Management (CAD 19 SM), pursuant to Regulation 167 of the Malaysian CivilAviation Regulations (MCAR 2016)
- Issue 01/Revision 00, and comes into operation on **1 April 2021**
- This CAD, revokes appendix 12 and appendix 13 of FOD 60OR-16 – Organisation Requirements for Air Operations, Issue 3 Amendment 0
- Issue 02/Revision 00, and comes into operation on **17 Dec 2021**
- CAD 19 Iss 02 , revokes CAD 19 Rev 01 and AN2101

SAFETY MANAGEMENT SYSTEM (SMS)

What is SMS ?

- **A systematic approach to managing safety, including thenecessary organizational structures, accountability, responsibilities, policies and procedures.**

SMS IMPLEMENTATION

- The SMS of a service provider shall:

a) be established in accordance with the framework elements; and

b) be commensurate with the size of the service provider and the complexity of its aviation products or services.

SMS FRAMEWORK

1. Safety policy and objectives

1. Management commitment
2. Safety accountability and responsibilities
3. Appointment of key safety personnel
4. Coordination of emergency response planning
5. SMS documentation

2. Safety risk management

1. Hazard identification
2. Safety risk assessment and mitigation

3. Safety assurance

1. Safety performance monitoring and measurement
2. The management of change
3. Continuous improvement of the SMS

4. Safety promotion

1. Training and education
2. Safety communication

C1 : SAFETY POLICY AND OBJECTIVES

Element 1 : Management commitment - Safety Policy

The service provider shall define its safety policy in accordance with international and national requirements.

The safety policy shall:

a) reflect organisational commitment regarding safety, including the promotion of a positive safety culture;

b) include safety reporting procedures;

c) include a clear statement about the provision of the necessary resources for the implementation of the safety policy;

d) clearly indicate which types of behaviours are unacceptable related to the service provider's aviation activities and include the circumstances under which disciplinary action would not apply;

e) be signed by the accountable executive of the organisation;

f) be communicated, with visible endorsement, throughout the organisation; and

g) be periodically reviewed to ensure it remains relevant and appropriate to the service provider.

C1 : SAFETY POLICY AND OBJECTIVES

Element 1 : Management commitment - Safety Policy

Taking due account of its safety policy, the service provider shall define safety objectives. The safety objectives shall:

a) form the basis for safety performance monitoring and measurement as required by 5.1.2;

b) reflect the service provider's commitment to maintain or continuously improve the overall effectiveness of the SMS;

c) be communicated throughout the organization; and

d) be periodically reviewed to ensure they remain relevant and appropriate to the service provider

SAFETY OBJECTIVES

- A brief, high-level statement of safety achievement or desired outcome to be accomplished by the State safety programme or service provider's safety management system.

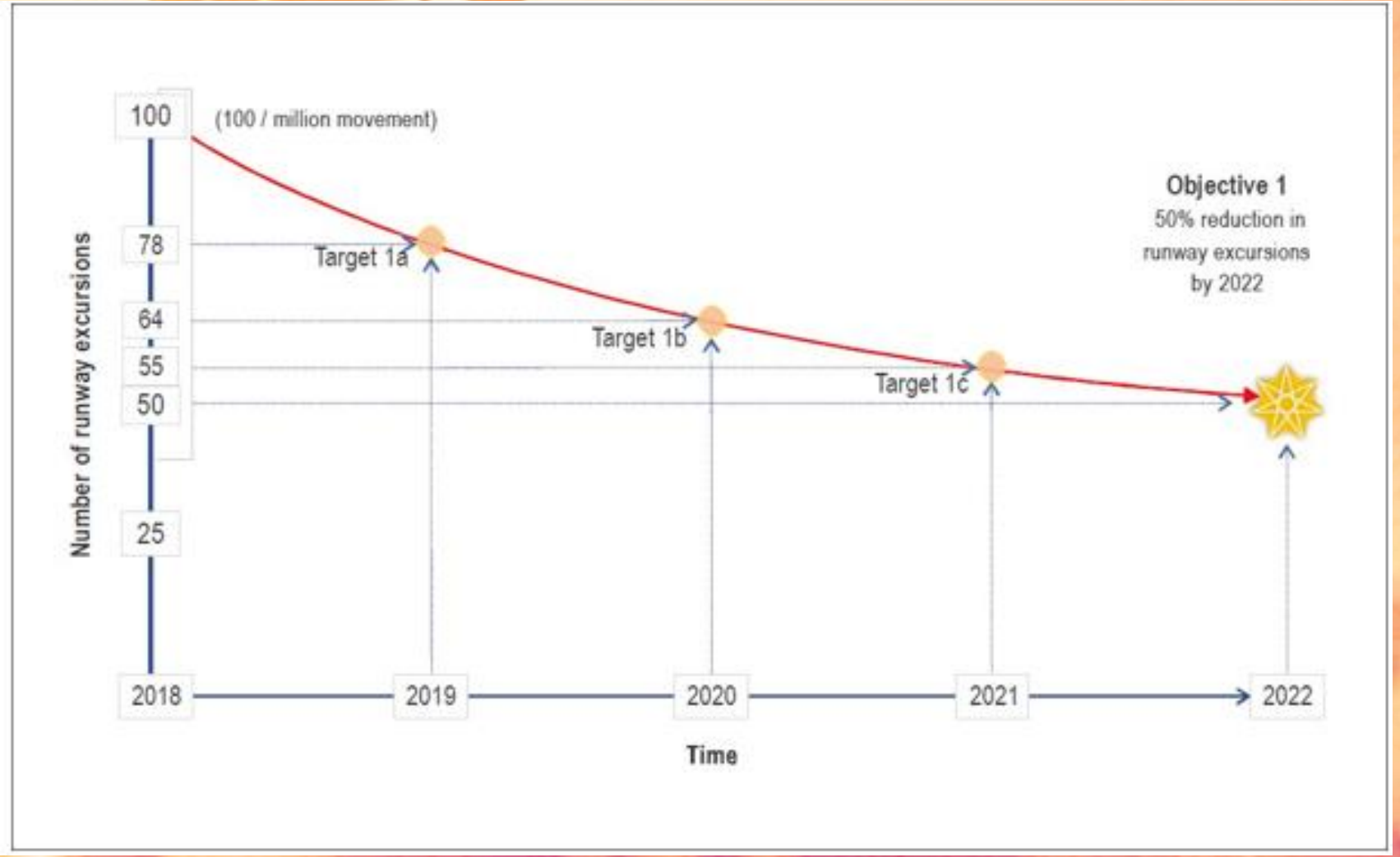
Notes on SMART safety objective

- S = Specific
- M = Measurable
- A = Achievable
- R = Relevant
- T = Timely

SAFETY OBJECTIVES

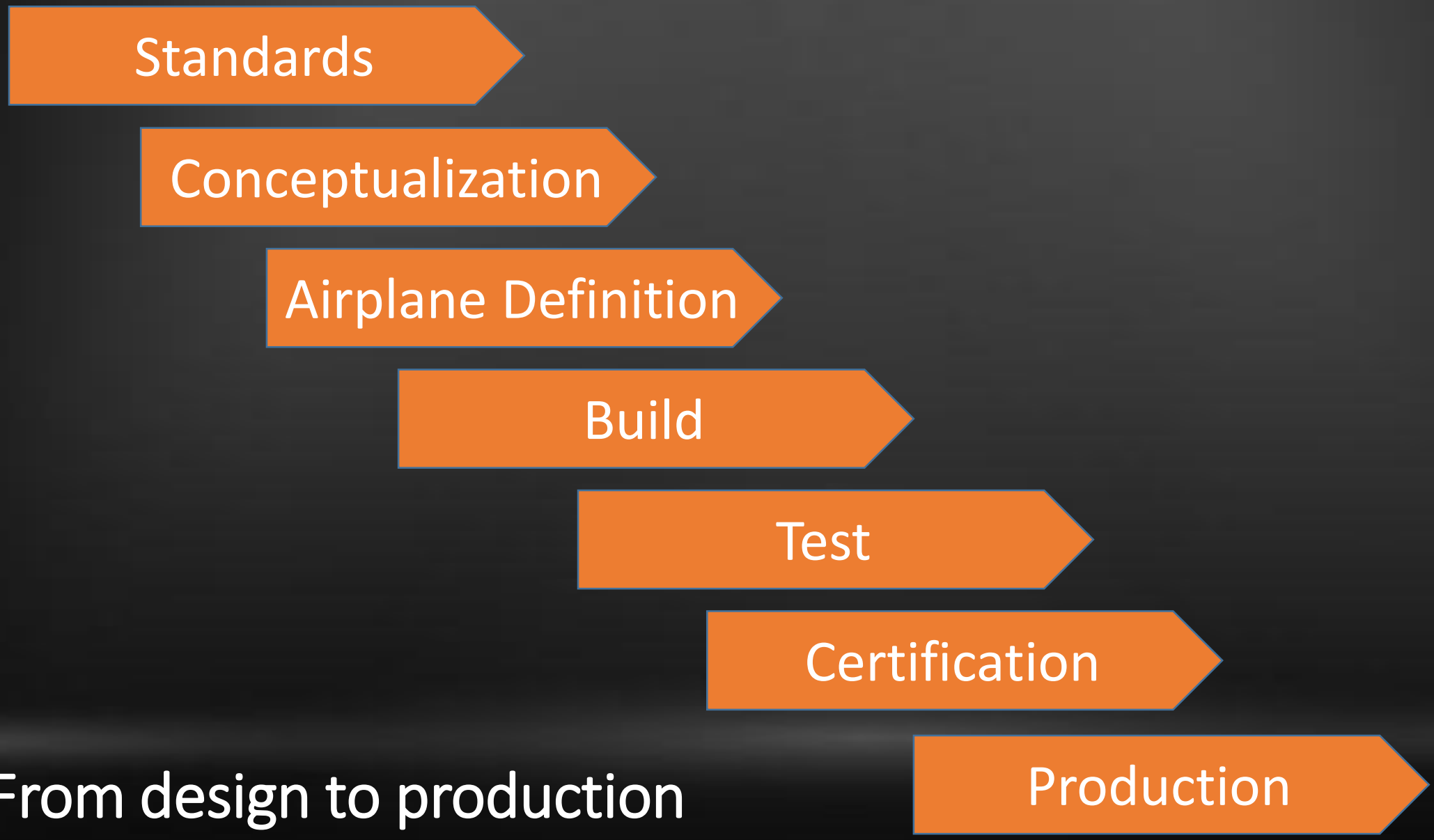
Viable Safety Objectives	Non-viable Safety Objectives
Reduce our Aggregate Reportable Occurrences rateto < 5.0 per 10,000 Flying Hours, by Dec 2022. Reduce Level-bust incidents in our FIR to 0.5 incidentper 10,000 air movement, by Dec 2022 To achieve a minimum State Safety PerformanceLevel (ALoSP) of 75% by end 2022 Improve Effective Implement (EI) of Critical Elements(CEs) of 75% by end of 2022	To reduce our Aggregate Reportable Occurrancesrate over the next 5 years To reduce Level-bust incidents in our FIR To improve our safety performance over the next 5years To improve Effective Implement (EI) of CriticalElements (CEs)

Example SPTs with SMART safety objective



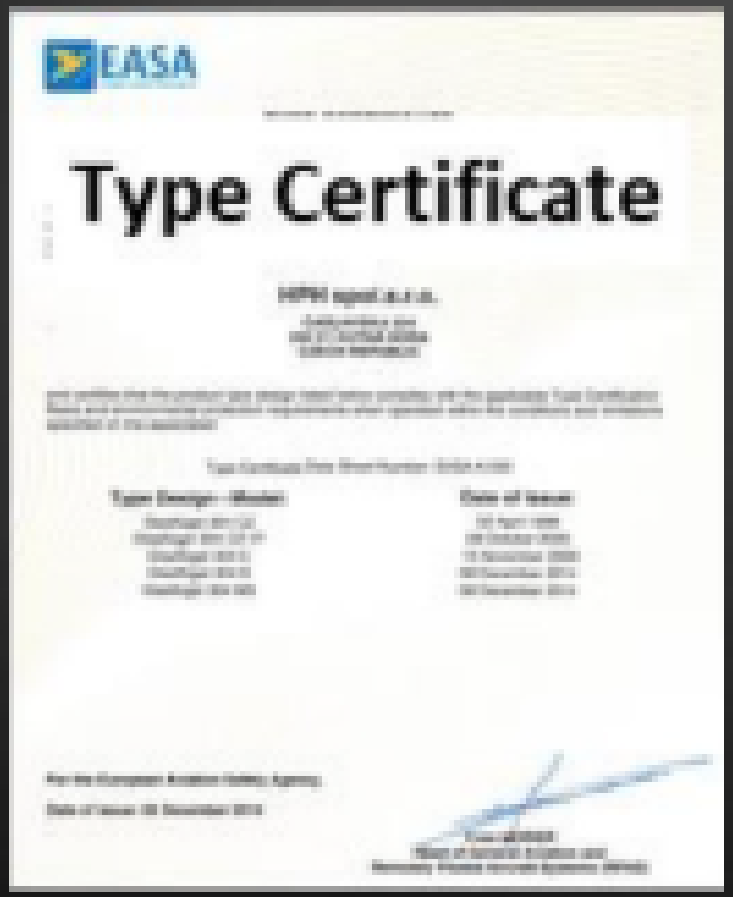
Airworthiness Principles

Initial Airworthiness

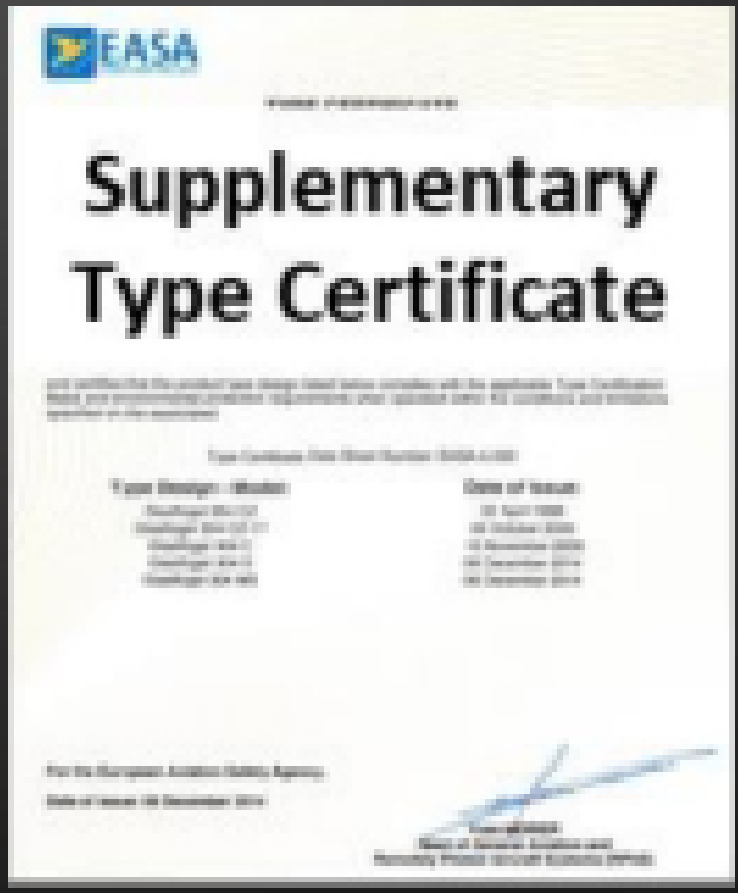


From design to production

Initial Airworthiness


EASA

Type Certificate


EASA

Supplementary Type Certificate

Indicated by the issue of Type Certificate/Supplementary Type Certificate

Airworthiness principles are implemented in each & every stage.

Chapter 01

Concept & Evaluation of Safety

- Safety Concept
- Evolution of Safety

What is safety?

" The state in which **risks** associated with aviation activities, **related to** or in **direct support** of the operation of aircraft, are **reduced** and **controlled** to an **acceptable level**."

Safety in the general context

The state In which:

The **possibility of harm is reduced to**, and maintained at or below, **an acceptable level** through a continuing process of hazard identification and **safety risk management.**

0 % Incident & Accident

- Controlled risk
- Controlled errors

……. Are acceptable in an inherently safe system

Who needs to remain safe?

PERSONNEL

ENVIRONMENT

EQUIPMENT

CUSTOMERS

The eras of safety evolution

Safety Performance

Technical Era

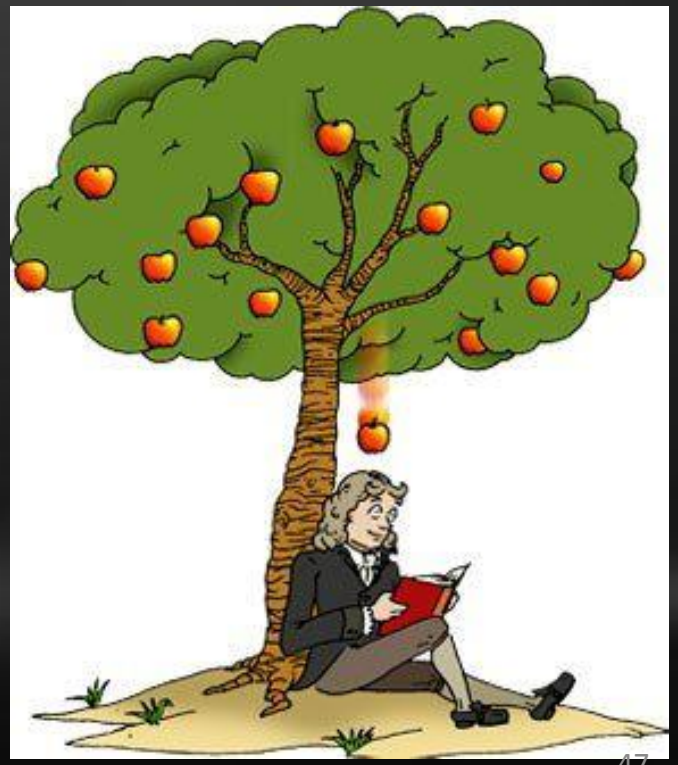
1900s – late 1960s

The focus of safety endeavors was therefore placed on the *investigation* and *improvement* of *technical factors.*

Human Factors Era

Early 1970s – mid 1990s

The focus of safety endeavors was extended to include human factors issues including the man-machine interface.



Organizational Era

From the mid - 1990s

The “organizational accident” was introduced, considering the impact of organizational culture and policies on the effectiveness of safety risk controls.

Technical Era

Human Factors Era

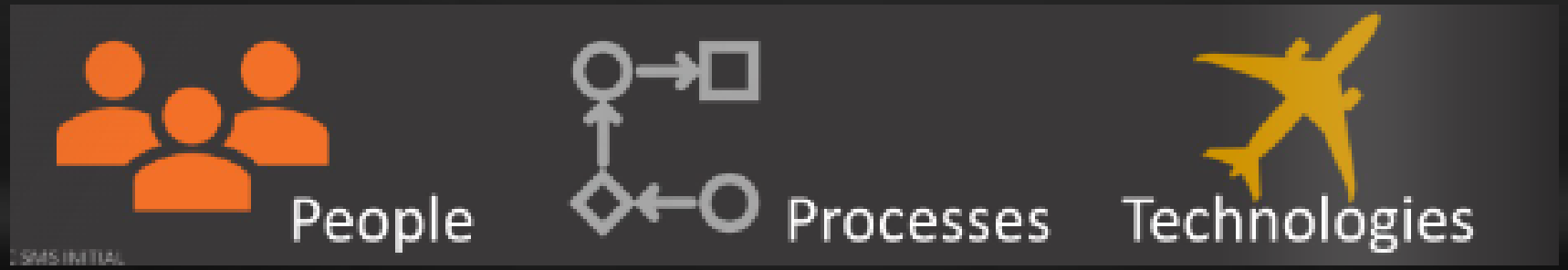
Organizational Era

…….. have focused largely on *individual safety performance* and *local control*, with *minimal regard* for the wider context of the *total aviation system.*

Total System Era

21st century onwards

The steady, compounding evolution of safety has led States and service providers to a point where they are giving serious consideration to the *interactions and interfaces between the components of the system:*



Total System Era

21st century onwards

Many states and service providers had embraced the safety approaches of the past and evolved to a higher level of safety maturity.

They have begun implementing

State Safety Program

or

State Management System

are reaping the safety benefits

The era of safety evolution

Responds to events (incidents & accidents) that have already happened.

Reactive (Past)

Proactive (Present)

Actively seeks the identification of hazardous conditions through the analysis of the organization's process.

Analyses system processes and environment to identify potential / future problems.

Predictive (Future)

Summary:

1.) Safety is a state in which the possibility of harm is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and safety risk management.

2.) Safety has evolved from “reactive” response to present “proactive” hazard identification and risk management and evolving into a “predictive” systematic analysis process to identify potential future problems.