

# Introduction to Aviation System and Air Transport Regulation (AAE2004)

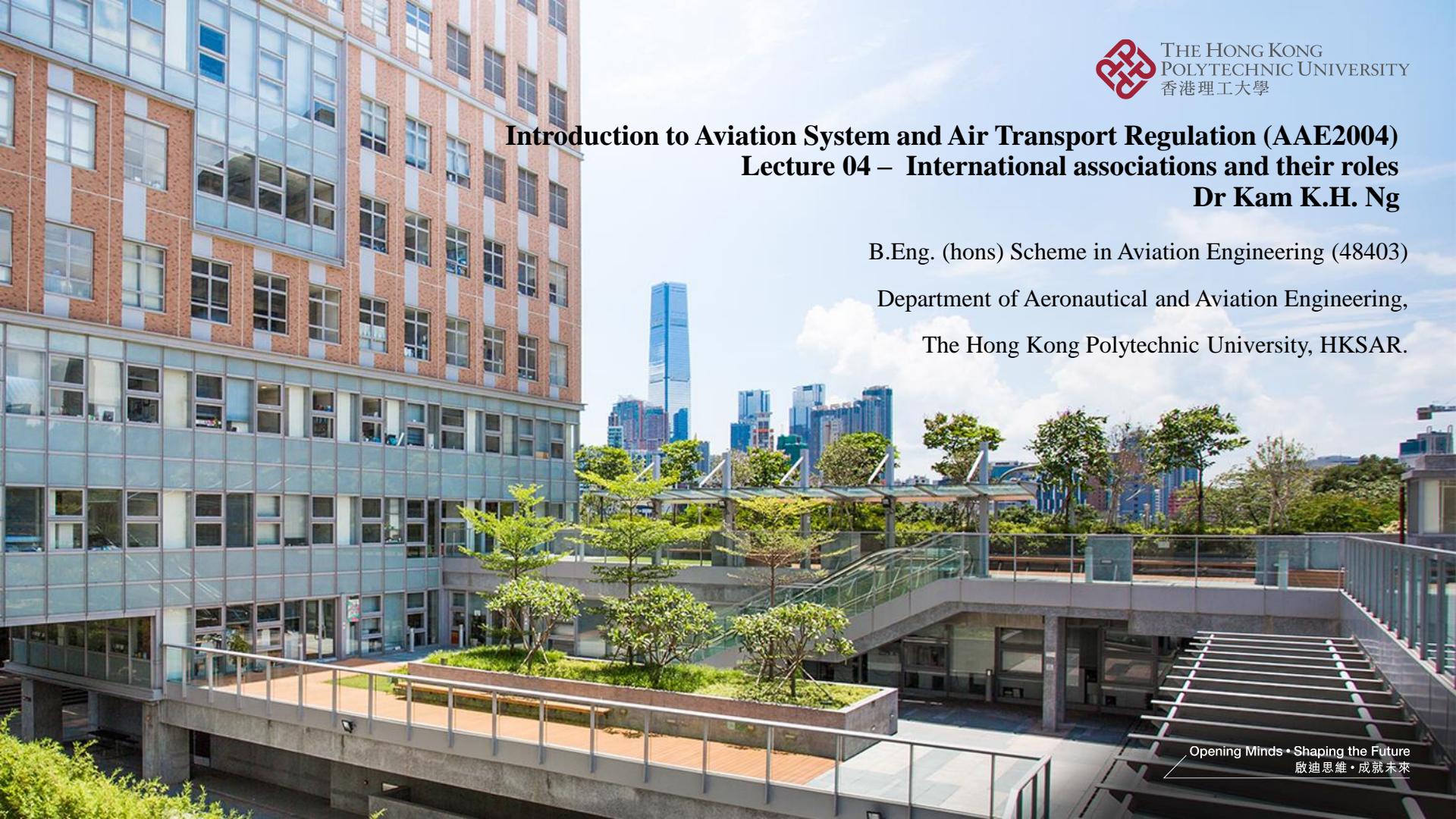
## Lecture 04 – International associations and their roles

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## Agenda

- International Civil Aviation Organisation (ICAO)
- International Air Transport Association (IATA)
- Airport Council International (ACI)

# Civil aviation authorities



United States - Federal aviation administration (FAA)



European – European union aviation safety agency (EASA)



United Kingdom – Civil aviation authority (CAA)



China – Civil aviation administration of China (CAAC)



Hong Kong- Civil aviation department (CAD)



Singapore - Civil aviation authority of Singapore (CAAS)



# Functions of civil aviation authority

Civil aviation authority (CAAs) **oversee**, **regulate** and **ensure** the required standards are met with the following activities within **their national territory**.

## 1. Personnel licensing

provide regulation of the basic training and issuance of licenses and certificates.

## 2. Flight operations

carry out safety oversight of commercial operators.

## 3. Airworthiness

issue certificates of registration;  
certificate airworthiness to civil aircraft; and  
oversee the safety of aircraft maintenance organisations.



# Functions of civil aviation authority

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## 4. Aerodromes

design and construct aerodrome facilities.

## 5. Air traffic services

manage the traffic within the area control of the country's airspace.

## 6. Certification

ensure the design complies with the required standards;  
satisfy the quality assurance test; and  
issue different types of certificates to civil aviation equipment.



# Functions of civil aviation authority

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# International Civil Aviation Organisation (ICAO)

## A united nations specialised agency

# Come about of ICAO

- Wartime cooperation overcame many political barriers.
- Military aircraft were able to operate within ally territories, and into enemy territories at will.
- After the war, many political and technical obstacles must be overcome if the same freedom of the air and benefits were to be enjoyed by international civil aviation.





# International civil aviation issues

In the drawn of international civil aviation, countries need to decide:

- The problem of air commercial rights.
- What arrangements needed to be made for the airlines of one country to fly into and through the territories of another.
- What could be done to maintain the air navigation facilities installed during the WWII, and further develop such facilities around the globe.
- How to standardise and regulate air transportation to ensure high level of safety is meet everywhere.
- How to establish equal opportunity in international civil aviation for all states.



# Conference on International Civil Aviation

Initiated by the US and with consultations between the major allied, the US government extended an invitation to 55 allied and neutral states to attend, in November 1944, an International Civil Aviation Conference in Chicago:

- To discuss the principles and methods to be followed in the adoption of a new air transport convention.
- To make arrangements for the immediate establishment of provisional world air routes and services.
- To set up an interim council to collect, record and study data concerning international aviation.
- To make recommendations for its improvement.
- In essence, the purpose of the conference was to discuss the regulations, conventions and development of international Civil Air Services and Transport for peaceful purposes.



# Conference on International Civil Aviation (cont'd)

Four principle agreements resulted from the Conference on International Civil Aviation in Chicago:

1. The Interim Agreement of International Civil Aviation
2. The Convention on International Civil Aviation
3. The International Air Service Agreement
4. The International Air Transport Agreement

Interim agreement of international civil aviation:

- Foreseen inevitable delays in the ratification of the convention, the conference had signed this Interim Agreement to establish a provisional body, the Provisional International Civil Aviation Organization (PICAO), so that work could start immediately.
- This organisation was in operation from August 1945 to April 1947 when the permanent ICAO came into being.

# Conference on International Civil Aviation (cont'd)

## The Convention on International Civil Aviation:

- The agreement known as the Chicago Convention was signed by 52 states who attended the conference. The agreement affirms every state's complete and exclusive sovereignty over the airspace above its territory. It states that:
  - Scheduled international air services may be operated from one country into or over the territory of another foreign country only with the latter's authorisation, and member states are permitted to establish prohibited areas.
  - Non-scheduled flights may be conducted by civil aircraft of one country into or over the territory of another subjected to certain conditions and limitations.





# Conference on International Civil Aviation (cont'd)

The International Air Service Agreement guarantees:

- 1) Freedom of civil aircraft to fly over foreign countries and territories as long as they do not land.
- 2) Freedom of civil aircraft to make non-traffic landings, for refuelling or overhaul only, in foreign territory.
- The agreement established for the first time the principle of automatic right of transit and of emergency landing.

The International Air Transport Agreement:

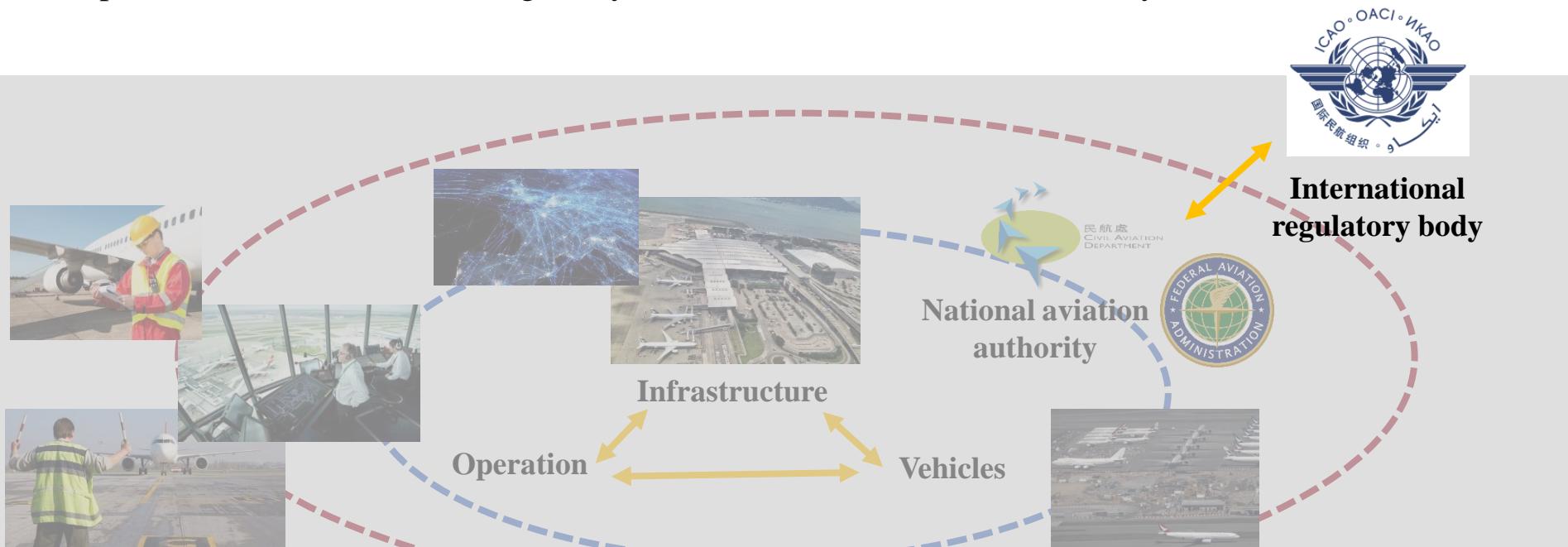
- This transport agreement established three other freedoms of the air.
- 3) Freedom to transport passengers and cargo from an aircraft's home country to another country.
- 4) Freedom to transport passengers and cargo from another country's territory to an aircraft's home country.
- 5) Freedom to carry air traffic between countries other than the aircraft's home country.

- The International Civil Aviation Organization (ICAO) came into being in April 1947 upon the 26th ratification of the Convention on International Civil Aviation in Chicago in 1945.
  - ICAO is a UN specialised agency since October 1947.
  - The headquarter is located in Montreal, Canada.
- 
- ICAO works with the Convention's current 191 signatory states, global industry and aviation organisations to develop international Standards and Recommended Practices (SARPs)
    - Used by States when they develop their legally-binding national civil aviation regulations.
  - There are currently over 10,000 SARPs reflected in the 19 Annexes to the Chicago Convention which ICAO oversees.
  - Through these SARPs and ICAO's complementary policy, auditing and capacity-building efforts that today's global air transport network is able to operate over 100,000 daily flights, safely, efficiently and securely in every region of the world.



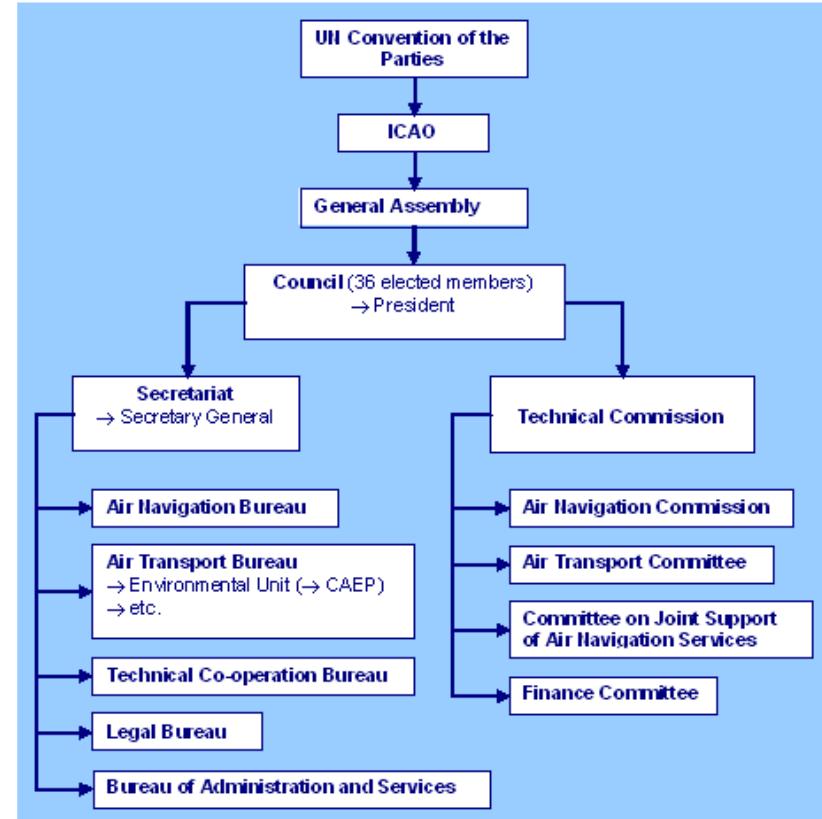
# ICAO (cont'd)

At an international level, ICAO oversees and facilitates the standardisation, harmonisation and cooperation of civil aviation of signatory states and national aviation authority.



# Organisational structure

- The constitution of ICAO is the Convention on International Civil Aviation, drawn up by a conference of International Civil Aviation in Chicago in December 1944, and to which each ICAO Signatory State is a party.
- According to the terms of the convention, the organisation is made up of an assembly, a council of limited membership with various subordinate bodies and a secretariat. The chief officers are the president of the council and the secretary general.



# Organisational structure (cont'd)

## The Assembly

- Composed of representatives from all Contracting States.
- The sovereign body of ICAO.
- It meets every three years, reviewing in detail the work of the organisation and setting policy for the coming years.



# Organisational structure (cont'd)

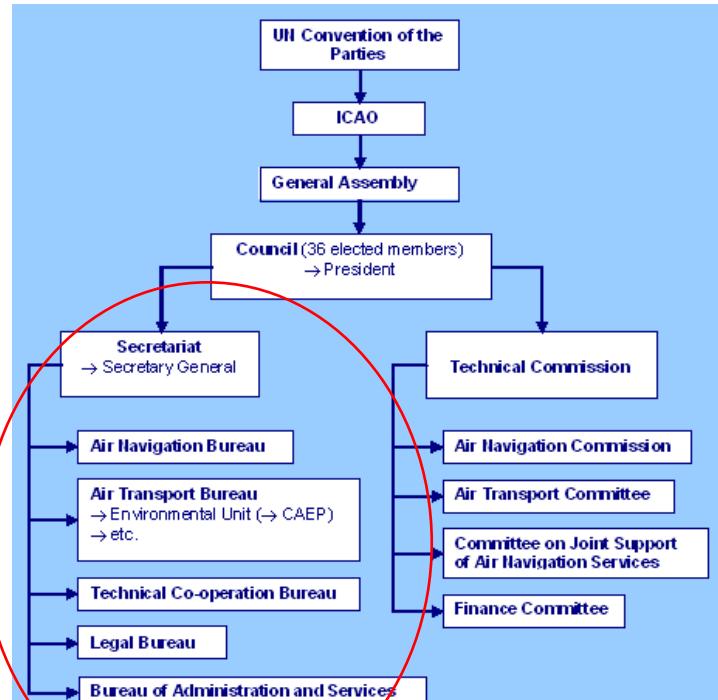
## The Council

- The governing body which is elected by the assembly for a three-year term, composes of 36 States.
- The assembly chooses the council member states under three parts:
  - Part I - States of chief importance in air transport.
  - Part II - States which make the largest contribution to the provision of facilities for air navigation.
  - Part III - States those designation will ensure that all major areas of the world are represented.
- As the governing body, the council gives continuing direction to the work of ICAO. It is in the council that Standards and Recommended Practices (SARP) are adopted and incorporated as Annexes to the Convention on International Civil Aviation.

# ICAO divisions

## The Secretariat

- Headed by a Secretary General, is divided into five main divisions:
  - The Bureau of Administration and Services
  - The Air Navigation Bureau
  - The Air Transport Bureau
  - The Technical Co-operation Bureau
  - The Legal Bureau
- Professional-level personnel of ICAO are recruited on a broad geographical basis in order to ensure that the work of the secretariat reflects a truly international perspective.



# ICAO divisions (cont'd)

## The Bureau of Administration and Services

- Responsible for providing the administrative support required by the organisation.
- The Bureau plays a leading role in its effective and efficient administrative management.

## The Air Navigation Bureau

- Unmanaged air traffic growth can lead to increased safety risks in those circumstances when it outpaces the regulatory and infrastructure developments needed to support it.
- The Bureau manages the safety and infrastructure strategies of ICAO in a partnership with aviation stakeholders.
- This work is carried out within a framework with the following elements:
  - Policy and standardisation
  - Safety and infrastructure monitoring
  - Safety and infrastructure analysis
  - Safety and infrastructure implementation



# ICAO divisions (cont'd)

## The Air Transport Bureau

- The Bureau supports the implementation of the Strategic Objectives of ICAO in particular:
  - Security and facilitation
  - Economic development of air transport
  - Environmental protection

## The Technical Co-operation Bureau

- ICAO's Technical Co-operation Programme provides advice and assistance to the contracting states in the development and implementation of air transport projects across the full spectrum of civil aviation, whether it's development of airports, NAA,.
- The Bureau provides the following services:
  - Expert consultant on airworthiness, flight operation , licensing and more.
  - Procurement of equipment and services
  - Training services

# ICAO divisions (cont'd)

## The Legal Bureau

- The Bureau provides advice and assistance to the Secretary General and through him to council and other bodies of the organisation and to ICAO Member States on constitutional, administrative and procedural matters, on problems of international law, air law, commercial law, labour law and related matters.



# ICAO Assembly and Council

- As of November 2011, there are 191 ICAO members , consisting of 190 of the 193 UN members (all but Dominica, Liechtenstein, and Tuvalu), plus the Cook Islands. Liechtenstein has delegated Switzerland to implement the treaty to make it applicable in the territory of Liechtenstein.
- As of 2013, the governing council of 36 members, divided into 3 categories is as follows:
  - Part I - States of chief importance in air transport: Australia, Brazil, Canada, China, France, Germany, Italy, Japan, Russian Federation, United Kingdom and the United States.
  - Part II – States which make the largest contribution to the provision of facilities for international civil air navigation: Argentina, Egypt, India, Mexico, Nigeria, Norway, Portugal, Saudi Arabia, Singapore, South Africa, Spain and Venezuela.
  - Part III – States ensuring geographic representation: Bolivia, Burkina Faso, Cameroon, Chile, Dominican Republic, Kenya, Libya, Malaysia, Nicaragua, Poland, Republic of Korea, United Arab Emirates and United Republic of Tanzania.

# The main missions of ICAO

- Promote safe, efficient and orderly development of international civil aviation.
- Set international standards necessary for the safety, security and efficiency of air transport.
- Increasing of efficiency of international civil aviation.
- Serve as the coordinator for international cooperation in all area of civil aviation.



# The main missions of ICAO (cont'd)

The missions are further elaborated through eight strategic objectives:

1. Foster the implementation of ICAO Standards and Recommended Practices (SARPs).
2. Develop and adopt new or amended SARPs and associated documents in a timely manner.
3. Strengthen the legal framework governing international civil aviation.
4. Ensure the currency, coordination and implementation of regional air navigation plans and provide the framework for the efficient implementation of new air navigation systems and services.
5. Respond to major challenges to the safe, secure and efficient development and operation of civil aviation.
6. Ensure that guidance and information on the economic regulation of international air transport is current and effective.
7. Assist in the mobilisation of human, technical and financial resources for civil aviation facilities and services.
8. Ensure the greatest possible efficiency and effectiveness in the operations of the organisation.



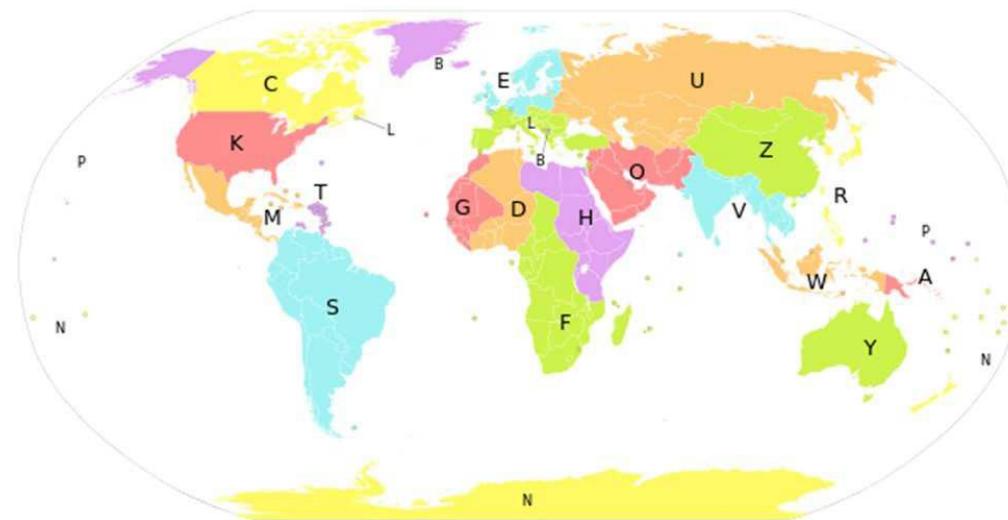


# Investigations of air disasters

- Most air accident investigations are carried out by a national aviation agency of a country that is associated in some way with the accident.
- E.g. The Air Accidents Investigation Branch conducts accident investigations on behalf of the British Government. ICAO has conducted three investigations involving air disasters, of which two were passenger airliners shot down while in international flight over hostile territory.
- **Libyan Arab Airlines Flight 114** which was shot down on 21 February 1973 by Israeli F-4 jets over the Sinai Peninsula during a period of tension that led to the Arab-Israeli Yom Kippur War.
- **Korean Air Lines Flight 007** which was shot down on 1 September 1983 by a Soviet Su-15 interceptor near Moneron Island just west of Sakhalin Island during a period of heightened Cold War tension.
- **UTA Flight 772** which was destroyed by a bomb on 19 September 1989 above the Sahara Desert in Niger, enroute from N'Djamena, Chad, to Paris, France.

# ICAO registered codes

- ICAO assigns standard airport and airline codes.
- ICAO codes are used by air traffic control and airline operations such as flight planning.
- ICAO uses 4-letter airport codes. The ICAO code is based on the region and country of the airport—for example, Charles de Gaulle Airport has an ICAO code of LFPG, where L indicates Southern Europe, F, France, PG, Paris de Gaulle, while Orly Airport has the code LFPO.



# ICAO registered codes (cont'd)

- ICAO assigns 3-letter codes to each aircraft operating agency (or airline), aeronautical authority, and services related to international aviation.
  - Airline codes for e.g. United Airlines is UAL. The 3-letter systems has been employed since 1987.
- ICAO maintains the standards for aircraft registration ("tail numbers"), including the alphanumeric codes that identify the country of registration.
  - Airplanes registered in the United States have tail numbers starting with N. The tail number helps people to identify it and this is important for operation around an airport.
- It is also important so that someone can report a violation, and that someone and its State is accountable for the aircraft.
- ICAO is also responsible for issuing alphanumeric aircraft type codes containing two to four characters.
  - These codes provide the identification that is typically used in flight plans. The Boeing 747 would use B741, B742, B743, etc., depending on the particular variant.





# Civil aviation authorities (CAA)

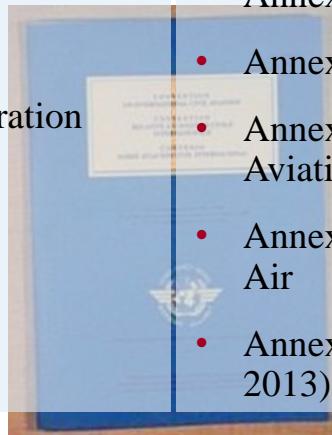
- Although ICAO manages the skies. It does not act as an enforcement authority of all signatory states.
- Instead, contracting countries pledge to adhere to standards set forth by the organisation, and establish CAA and civil aviation regulations within their own governments – in accordance with ICAO's annexes to the Chicago Convention.
  - E.g. FAA is the CAA in the US, CASA is the CAA in Australia, EASA is the CAA in the European Union, and CAD in Hong Kong.
- When ICAO makes a safety recommendation, all contracting states, CAA, airlines and all civil aviation stakeholders listen.
- ICAO work together with all contracting states, CAA, airlines and all civil aviation stakeholders to establish common standards and recommended practices for civil aviation & to promote international civil aviation and seamless global travel.



# ICAO Annex

# SARPs 19 Annexes

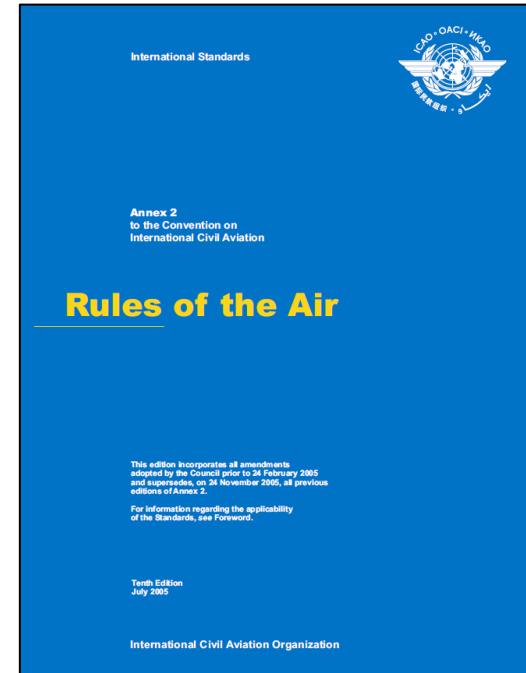
- Annex 1 – Personnel Licensing, Licensing of flight crews, air traffic controllers & aircraft maintenance personnel
- Annex 2 – Rules of the Air
- Annex 3 – Meteorological Service for International Air Navigation
- Annex 4 – Aeronautical Charts
- Annex 5 – Units of Measurement to be used in Air and Ground Operations
- Annex 6 – Operation of Aircraft
- Annex 7 – Aircraft Nationality and Registration Marks
- Annex 8 – Airworthiness of Aircraft
- Annex 9 – Facilitation
- Annex 10 – Aeronautical Telecommunications
- Annex 11 – Air Traffic Services – Air Traffic Control Service, Flight Information
- Service and Alerting Service
- Annex 12 – Search and Rescue
- Annex 13 – Aircraft Accident and Incident Investigation
- Annex 14 – Aerodromes
- Annex 15 – Aeronautical Information Services
- Annex 16 – Environmental Protection
- Annex 17 – Security: Safeguarding International Civil Aviation Against Acts of Unlawful Interference
- Annex 18 – The Safe Transport of Dangerous Goods by Air
- Annex 19 – Safety Management (Since 14 November 2013)



# ICAO Annexes

## Annex 2 - Rules of the Air:

- Air travel must be safe and efficient; this requires, among other things, a set of internationally agreed rules of the air. The rules developed by ICAO in this Annex consist of general rules, visual flight rules (VFR) and instrument flight rules (IFR).
- The rules apply without exception over the high seas, and over national territories so long as they do not conflict with the rules of the State being overflowed.
- The **pilot-in-command of an aircraft is responsible for compliance with the rules of the air.**



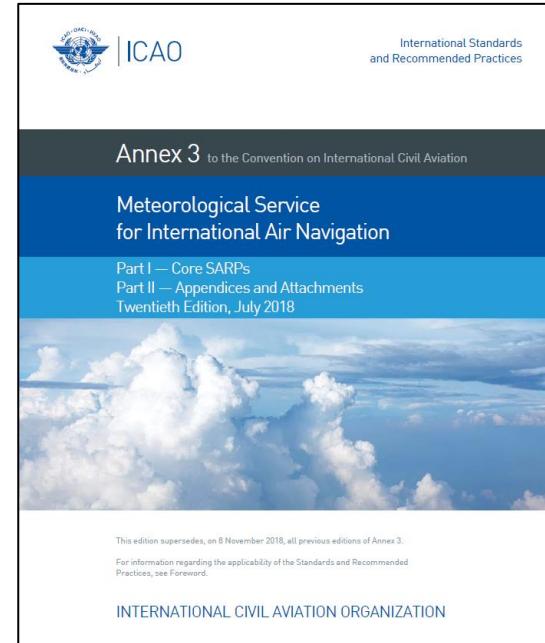
Annex 2 – One Part  
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# ICAO Annexes

## Annex 3 - Meteorological Service for International Air Navigation:

- This Annex contributes to the safety, efficiency and regularity of air navigation by providing necessary meteorological information to operators, flight crew members, air traffic services units, search and rescue units, airport management and others concerned with aviation

<http://www.aviatorjoe.net/go/wx/VHHH/>

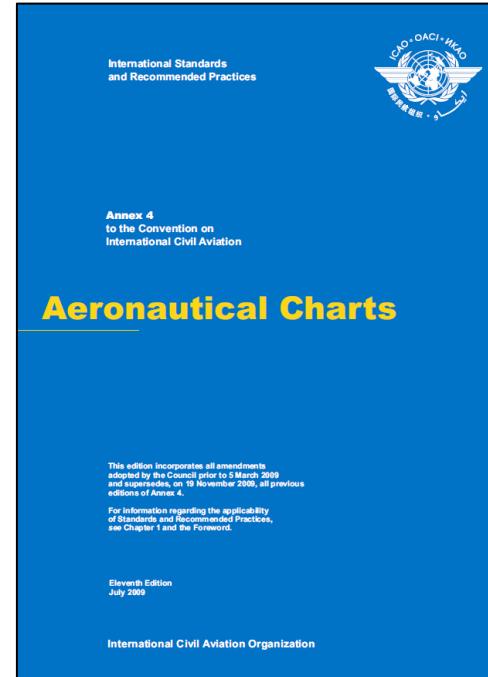


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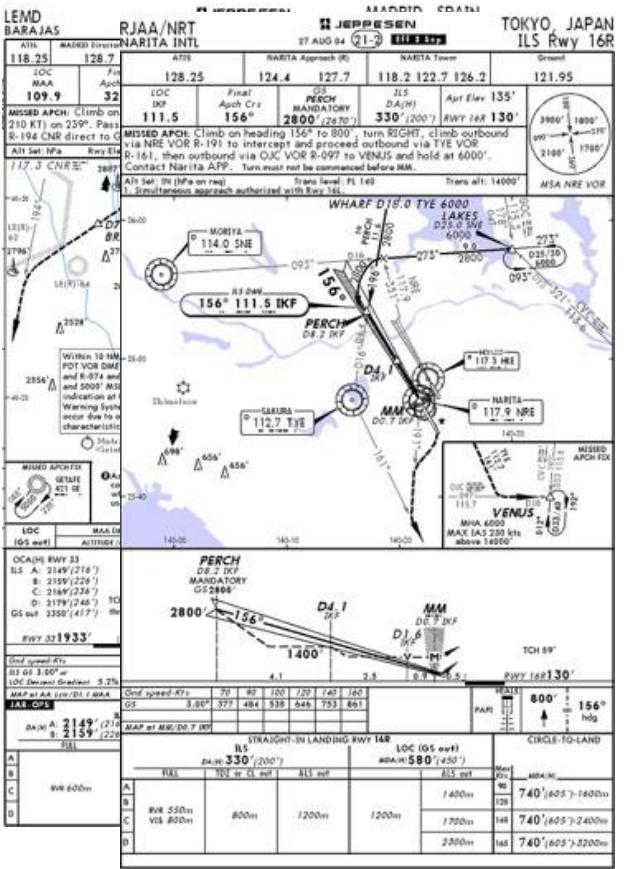
# ICAO Annexes

## Annex 4 - Aeronautical Charts:

- The world of aviation has no geographical or political boundaries, hence it requires maps to help navigate in air
- For the safe performance of air operations it is essential that a current, comprehensive and authoritative source of navigation information be made available at all times
- The aeronautical charts recommended in this Annex does provide a convenient medium for supplying this information in a manageable, condensed and coordinated manner.



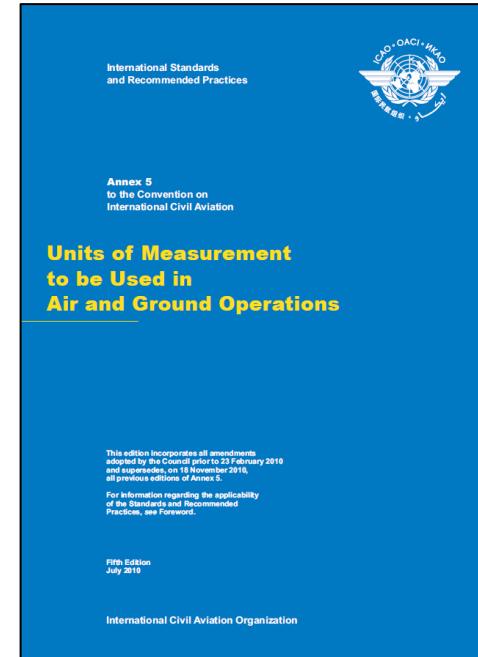
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# ICAO Annexes

## Annex 5 - Units for Measurement for Air/Ground Operations:

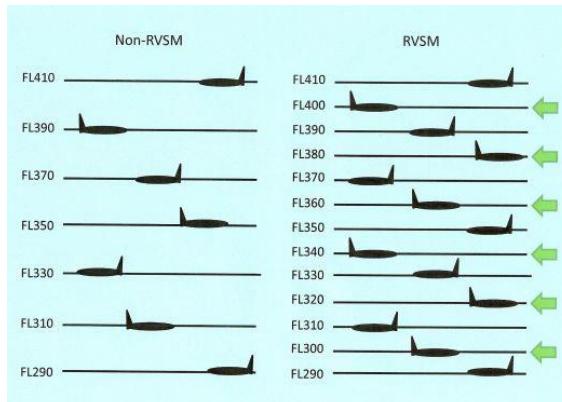
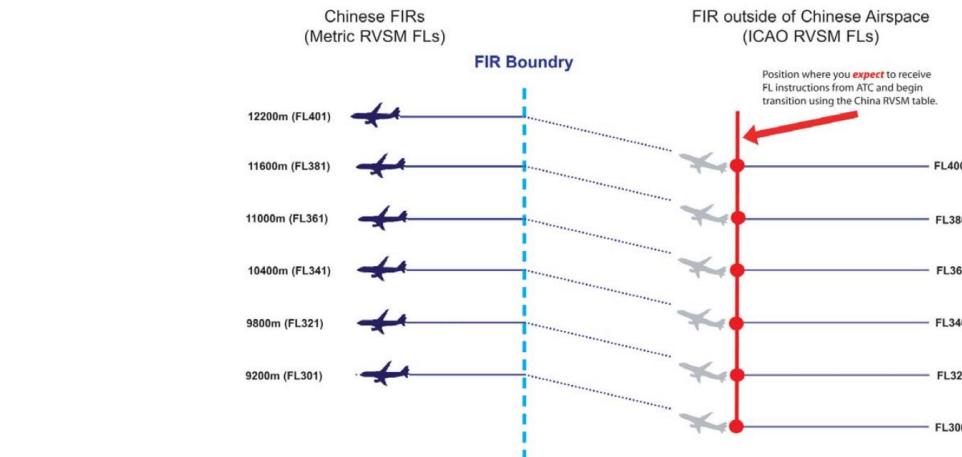
- It is important to have a common/standardized system of measurements to cover all aspects of air and ground operations and not just air-ground communications.
- It also introduced the International System of Units, known as SI from the "Système International d'Unités", as the basic standardized system to be used in civil aviation



Annex 5 – One Part only

# ICAO Annexes

IFR Flight			Track from 0° to 179°			Track from 180° to 359°		
Standard Metric	Meters	Feet	Standard Metric	Meters	Feet	Standard Metric	Meters	Feet
30	300	1000	60	600	2000			
90	900	3000	120	1200	3900			
150	1500	4900	180	1800	5900			
210	2100	6900	240	2400	7900			
270	2700	8900	300	3000	9800			
330	3300	10800	360	3600	11800			
390	3900	12800	420	4200	13800			
450	4500	14800	480	4800	15700			
510	5100	16700	540	5400	17700			
570	5700	18700	600	6000	19700			
630	6300	20700	660	6600	21700			
690	6900	22600	720	7200	23600			
750	7500	24600	780	7800	25600			
810	8100	26600	840	8400	27600			
890	8900	29100	920	9200	30100			
950	9500	31100	980	9800	32100			
1010	10100	33100	1040	10400	34100			
1070	10700	35100	1100	11000	36100			
1130	11300	37100	1160	11600	38100			
1190	11900	39100	1220	12200	40100			
1250	12500	41100	1310	13100	43000			
1370	13700	44900	1430	14300	46900			
1490	14900	48900	1550	15500	50900			
etc...	etc...	etc...	etc...	etc...	etc...			



# ICAO Annexes

## Annex 6 - Operation of Aircraft:

- This Annex contributes to the safety of international air navigation by **providing criteria for safe operating practices**, and to the efficiency and regularity of international air navigation by encouraging ICAO's Contracting States to facilitate the passage over their territories of commercial aircraft **belonging to other countries** that operate in conformity with these criteria

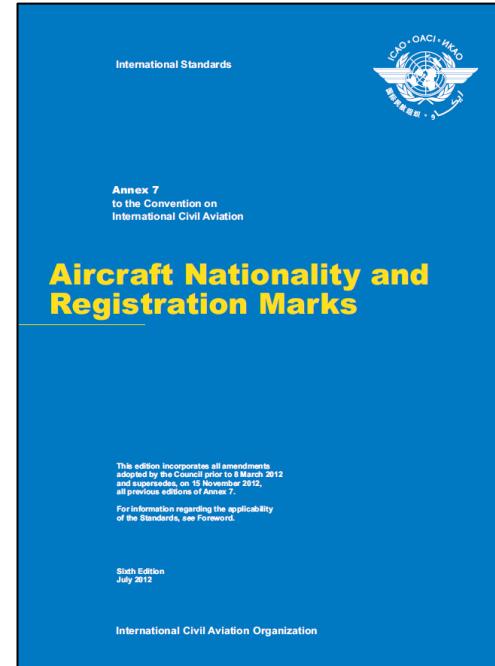
Note: Also defines certificates, ops manuals, equipment (CVR & DFDR etc.) to be carried onboard the aircraft



Annex 6 – Three Parts

## Annex 7- Aircraft Nationality and Registration Marks:

- This Annex defines how the aircraft are classified and identified, and you may tell aircraft nationality (see example later)



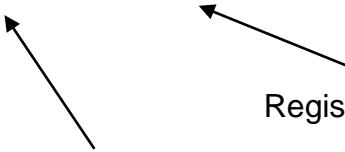
Annex 7 – One Part  
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# Annex 7- Aircraft Nationality and Registration Marks

- It is a Regulatory requirement that an aircraft must not fly unless it is registered and bear the Nationality and Registration Marks, as per [Article 20](#) of the ICAO Convention

The Nationality Mark for aircraft registered in Hong Kong is the capital letter **B**.

B - HUI



Nationality Mark

Registration Mark



- The Marks must be painted or affixed to the aircraft wing and fuselage.

The Nationality Mark for aircraft registered in China, United Kingdom, United States, France, Australia are:

- China (including Mainland China, HKSAR, MACAU SAR and T
- UK: **G**
- USA: **N**
- France: **F**
- Australia: **VH**

**Note:** There are stringent requirements on:  
-location of the nationality and registration marks  
-size (height and width) of the letters or numbers or dash as well as the spacing of the letters/numbers





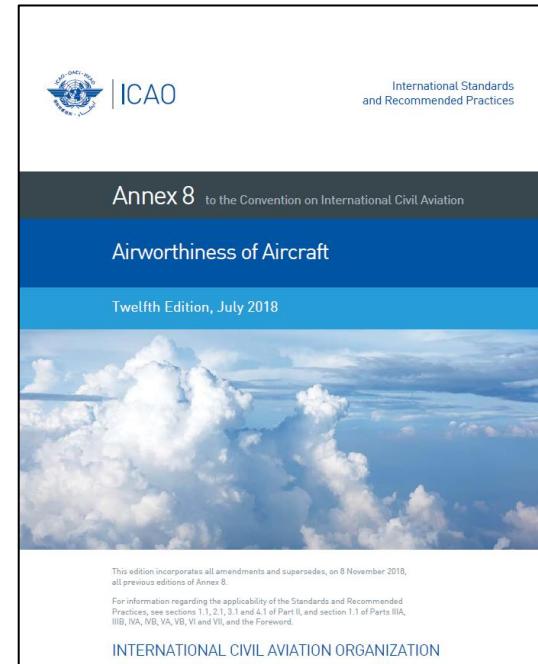
# Annex 7- Aircraft Nationality and Registration Marks

- In accordance with the Convention on International Civil Aviation (the “Chicago Convention”), **all civil aircraft** must be registered with a **national aviation authority** (NAA) using procedures set by each country.
- HKCAD Airworthiness Notice No. 9 explains the details of registration of aircraft in Hong Kong.
- **Currently, HKSAR uses:**
  - B-HAA to B-HZZ
  - B-KAA to B-KZZ
  - B-LAA to B-LZZ
- And China is using B-1500- 9999 & B- 00AA to B - 99ZZ

# ICAO Annexes

## Annex 8 - Airworthiness of Aircraft:

- It includes broad standards which **define**, for application by the national airworthiness authorities, the **minimum basis for the recognition by States of Certificates of Airworthiness (C of A)** for the purpose of flight of aircraft of other States into and over their **territories**, thereby achieving, among others, protection of other aircraft, third parties and property.

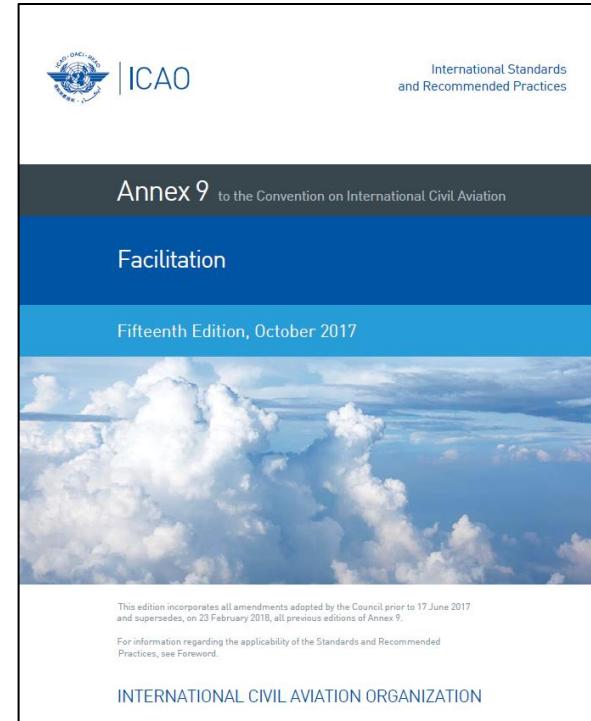


Annex 8 – One Part  
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# ICAO Annexes

## Annex 9 - Facilitation:

- This deals with, among others, **customs** and **immigration procedures**.
- *Each Contracting State needs to adopt all practicable measures to facilitate and expedite navigation by aircraft between the territories of Contracting States, and to prevent unnecessary delays to aircraft, crews, passengers, and cargo, especially in the administration of the laws relating to immigration, quarantine, customs and clearance.*
- *Each Contracting State should undertake to establish customs and immigration procedures affecting international air navigation in accordance with the practices established or recommended.*



Annex 9 – One Part  
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# ICAO Annexes

## Annex 10 - Aeronautical Telecommunications:

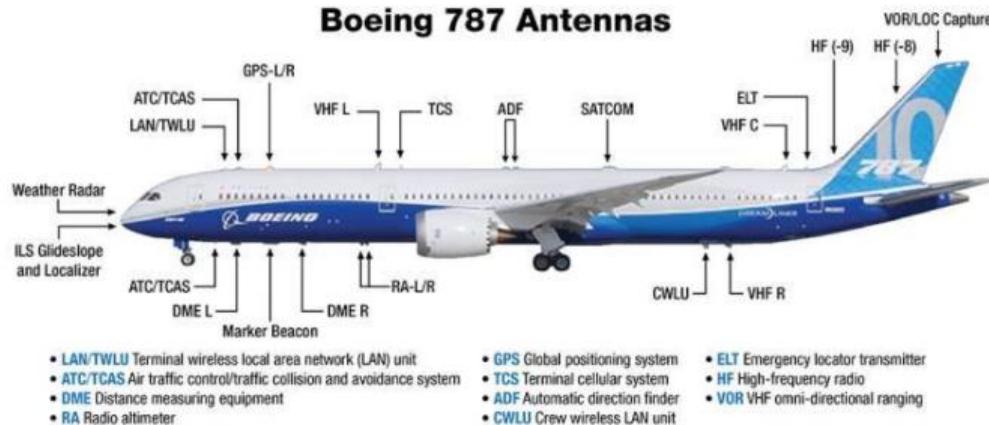
- This Annex consists of 5 volumes and they contain the SARPs for Air Navigation Services (PANS) and guidance material on aeronautical communication, navigation and surveillance systems.
- Explains the specifications for radio navigation aids and communication systems such as Instrument landing system (ILS), VHF, Traffic Collision Avoidance System, TCAS) etc.**



Annex 10 – Five Parts

# ICAO Annexes

## Annex 10 - Aeronautical Telecommunications:

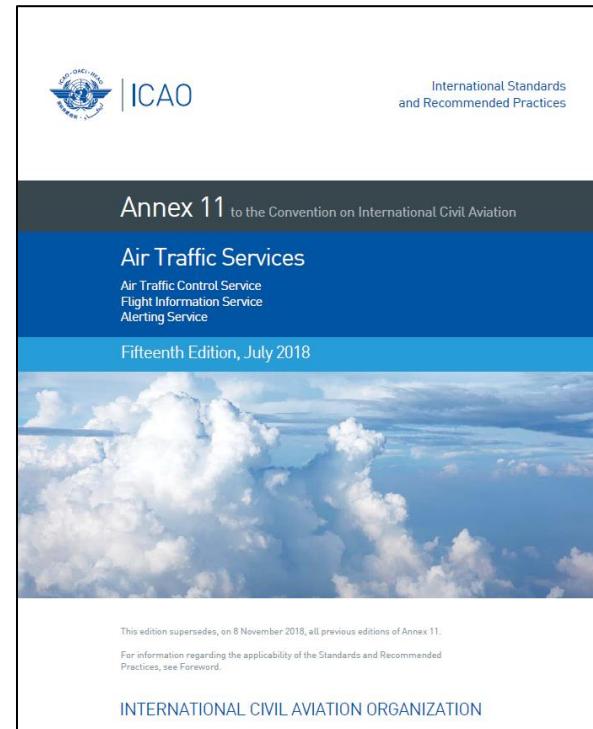


Antennas for Communication Between Aircraft to Ground and Aircraft-to-Aircraft

# ICAO Annexes

## Annex 11- Air Traffic Services:

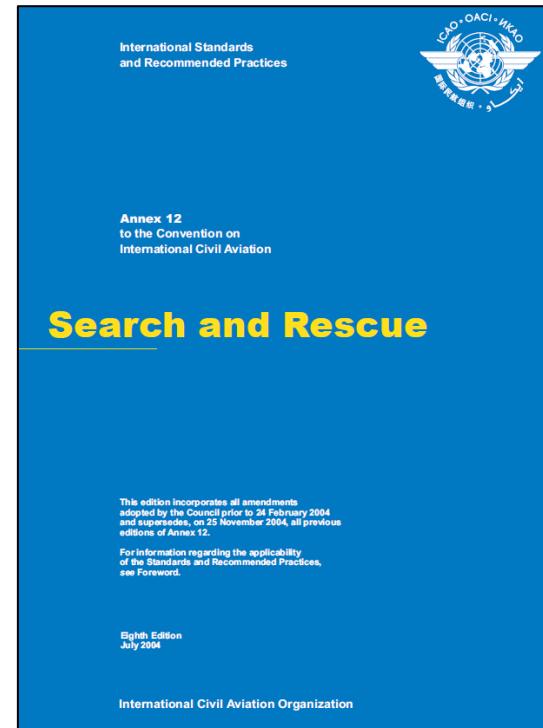
- This Annex defines how to prevent collisions between aircraft, whether taxiing on the manoeuvring area, taking off, landing, en route or in the holding pattern at the destination aerodrome.
- It also deals with ways of expediting and maintaining an orderly flow of air traffic and of providing advice and information for the safe and efficient conduct of flights and alerting service for aircraft in distress.
- To meet the above objectives, ICAO provisions call for the establishment of flight information centres and air traffic control units.



Annex 11 – One Part

## Annex 12 - Search and Rescue:

- **Search and rescue** (SAR) services are organized to respond to persons apparently in distress and in need of help. Prompted by the need to rapidly locate and rescue survivors of aircraft accidents, this Annex has defined a set of internationally agreed SARPs for SAR.
- It also defines the management and procedures for the establishment, maintenance and operation of search and rescue services on the part of the ICAO Contracting States in their territories and over the high seas.
- In addition, this Annex also deals with the establishment of mobile SAR units, the means of communication for these units and the designation of other elements of public or private services suitable for search and rescue activity.

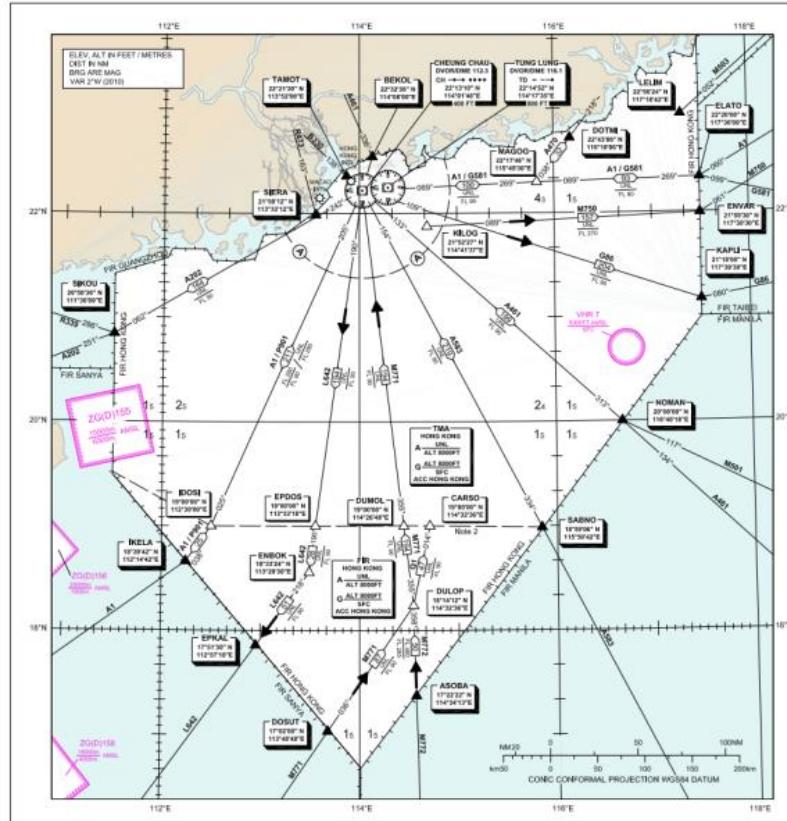


Annex 12 – One Part only

# ICAO Annexes

## Annex 12 - Search and Rescue:

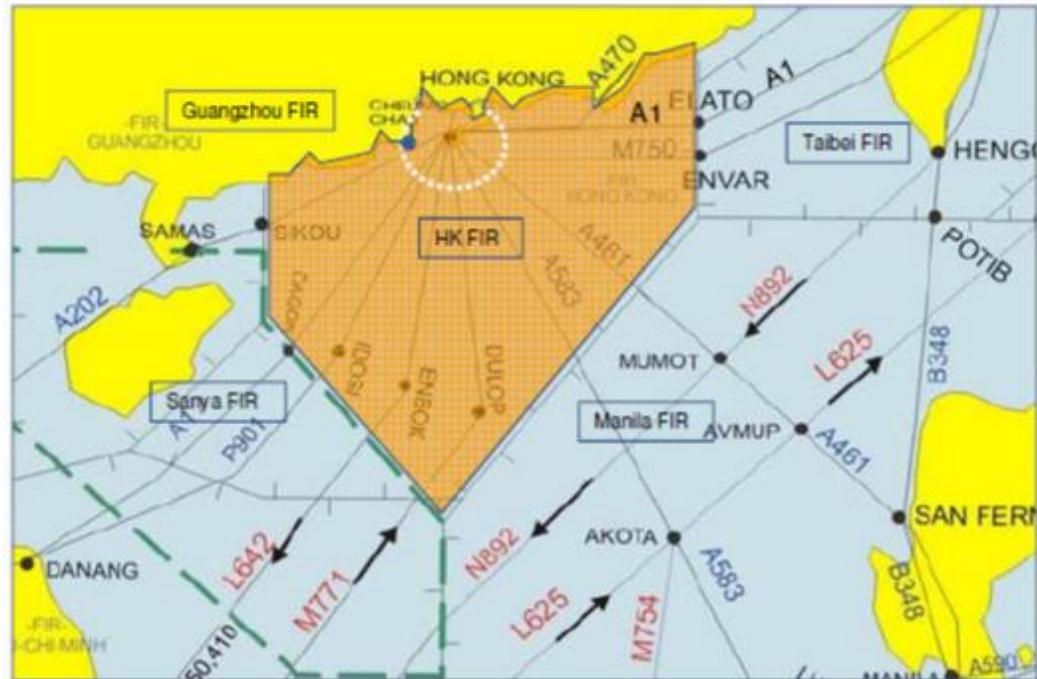
- Hong Kong Flight Information Region responsible for by HKCAD
- HKCAD will regularly conduct long-range search & rescue exercise together with the Chinese PLA Hong Kong Garrison, the Rescue and Salvage Bureau of Ministry of Transport (RSB), The Marine Department, Hong Kong Observatory and Government Flying Service



# ICAO Annexes

## Annex 12 - Search and Rescue:

Airways within the HK FIR and nearby FIRs



# FIRs?

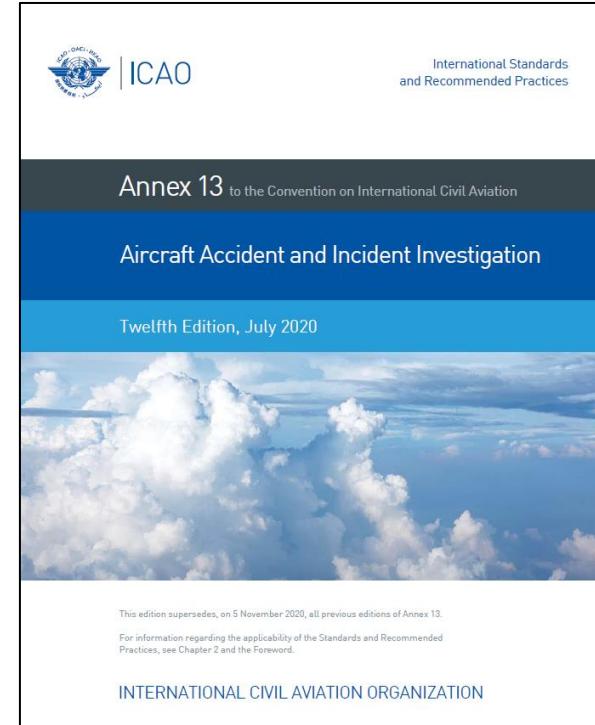
## SkyVector

<https://skyvector.com/>

# ICAO Annexes

## Annex 13 - Aircraft Accident and Incident Investigation:

- Provides the international requirements for the investigation of aircraft accidents and incidents.
- Is a reference document for people around the world who may be called on, often without any lead time, to deal with the many aspects involved in the investigation of an aircraft accident or serious incident.
- The Annex spells out which States may participate in an investigation, such as the States of Occurrence, Registry, Operator, Design and Manufacture. It also defines the rights and responsibilities of such States.
- In HKSAR, the Air Accident Investigation Authority (AAIA) will be leading the investigation if the accident/serious incident occur in Hong Kong Territory



Annex 13 – One Part only



## AAIA

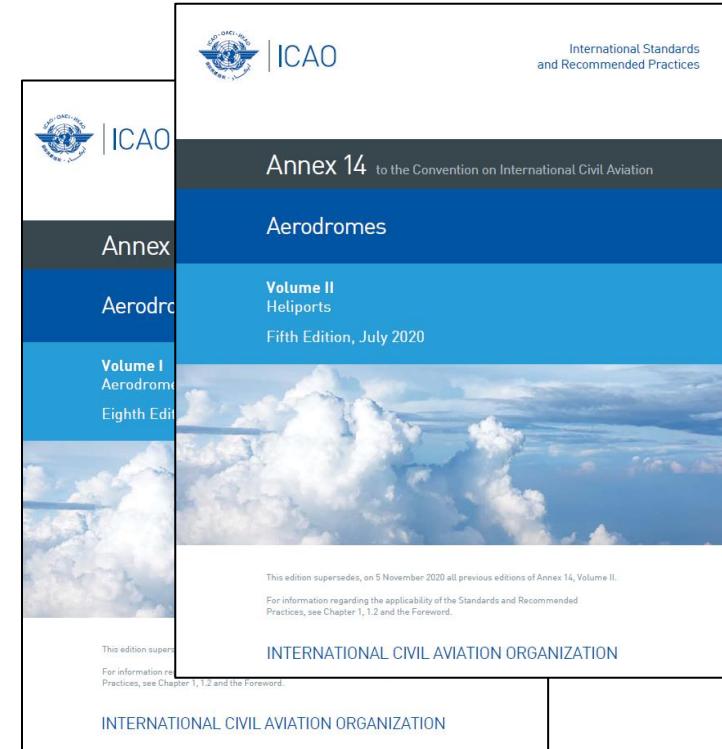
<https://www.tlb.gov.hk/aaia/eng/index.html>

Why not HKCAD?

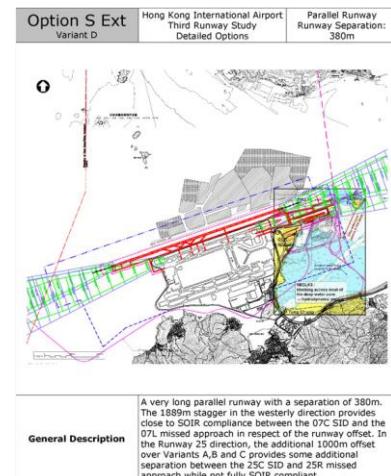
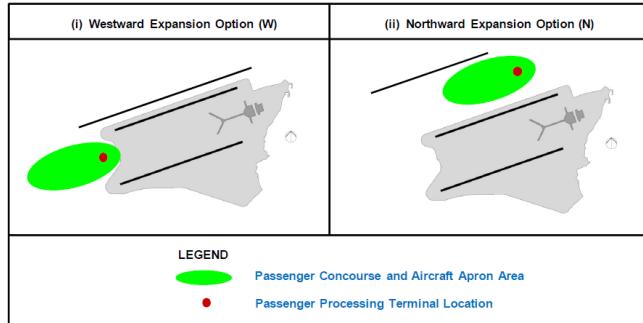
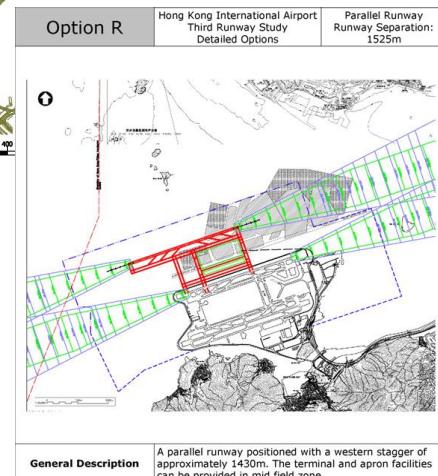
# ICAO Annexes

## Annex 14 - Aerodromes:

- This Annex was split into two volumes, Volume I dealing with **aerodrome design** and operations and Volume II dealing with **heliport design**.
- Among others, ICAO defines the **runways** by **two-parameter alphanumeric** called Aerodrome Reference Code which identify the length and width of the runway so an airline may establish whether a particular aircraft is able to use a particular aerodrome



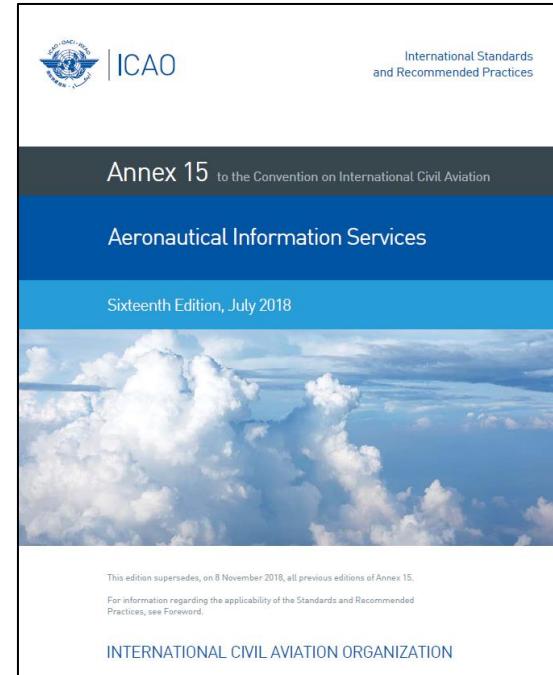
Annex 14 – Two Parts



# ICAO Annexes

## Annex 15 - Aeronautical Information Services:

- This Annex defines **how an aeronautical information service shall receive and/or originate**, collate or assemble, edit, format, publish/store and **distribute aeronautical information/data (presented in a standard format)**. This includes **information about**:
  - National regulations, rules and regulations
  - Aerodromes and heliports
  - Airspace
  - Air traffic services (ATS) routes
  - Instrument flight procedures
  - Radio navigation aids/systems
  - Obstacles
  - Terrain and
  - Geographic information
- The goal is to satisfy the need for uniformity and consistency in the provision of aeronautical information/data that is required for the operational use by international civil aviation.

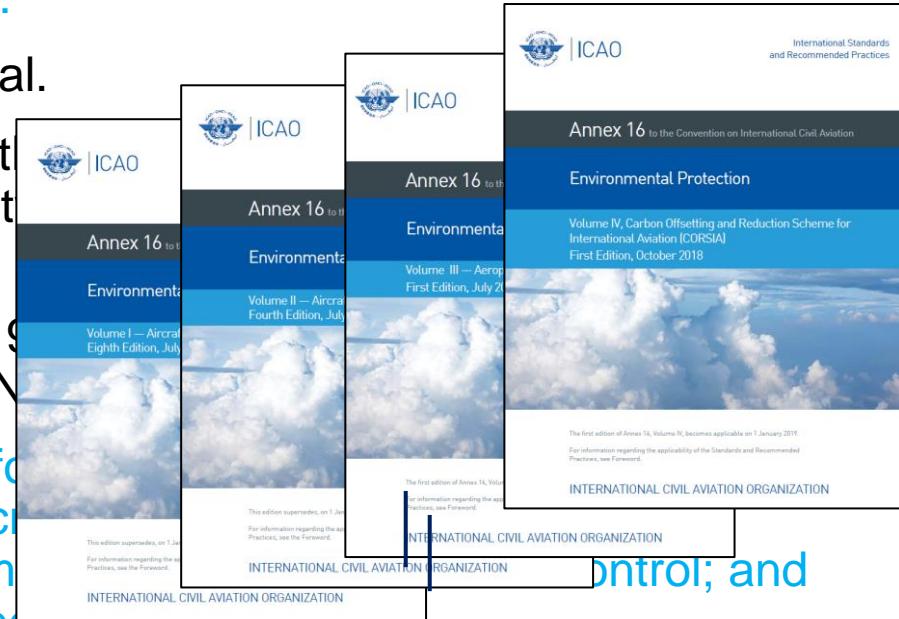


Annex 15 – One Part only

# ICAO Annexes

## Annex 16 - Environmental Protection:

- Annex 16 consists of 4 volumes in total.
- 2 volumes deal with the protection of the **noise and aircraft engine emissions** - the Chicago Convention was signed.
- The relevant topics were adopted in 1969 at the 1969 Special Meeting on Aircraft Noise.
- These aspects included: **procedures for human tolerance to aircraft noise; aircraft noise abatement; establishment of aircraft noise abatement; and ground run-up noise abatement procedures.**

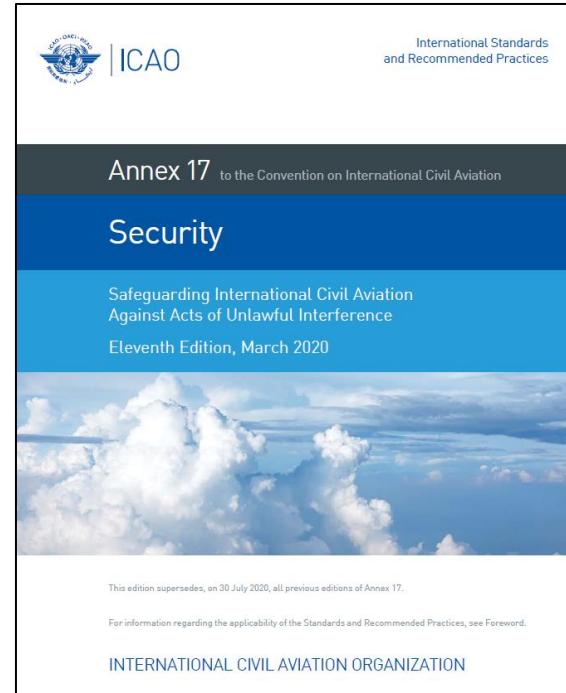


Annex 16 – Four Parts

# ICAO Annexes

## Annex 17 - Security :

- This Annex sets out the basis for the ICAO civil aviation security programme and seeks to safeguard civil aviation and its facilities against acts of unlawful interference.
- Of critical importance to the future of civil aviation and to the international community at large are the measures taken by ICAO to prevent and suppress all acts of unlawful interference against civil aviation throughout the world.

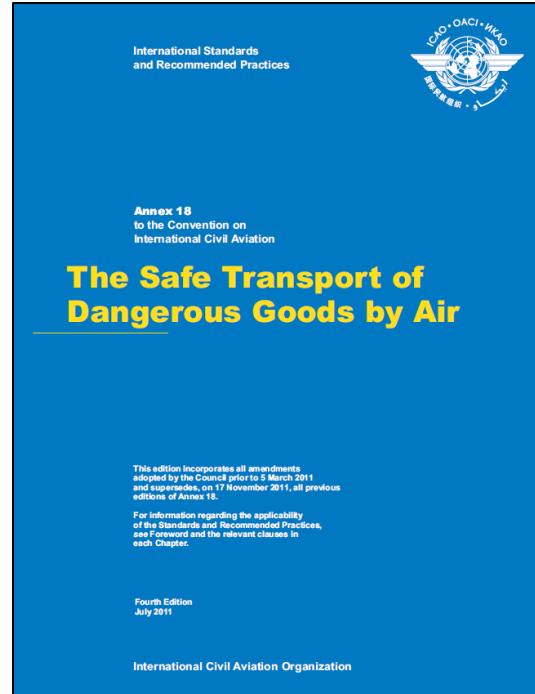


Annex 17 – One Part only

# ICAO Annexes

## Annex 18 - Safe Transport of Dangerous Goods by Air:

- More than half of the cargo carried by all modes of transport in the world is dangerous cargo – explosive, corrosive, flammable, toxic and even radioactive. These dangerous goods are essential for a wide variety of global industrial, commercial, medical and research requirements and processes. Because of the advantages of air transport, a great deal of this dangerous cargo is carried by aircraft
- This Annex specifies the broad Standards and Recommended Practices to be followed to enable dangerous goods to be carried safely.

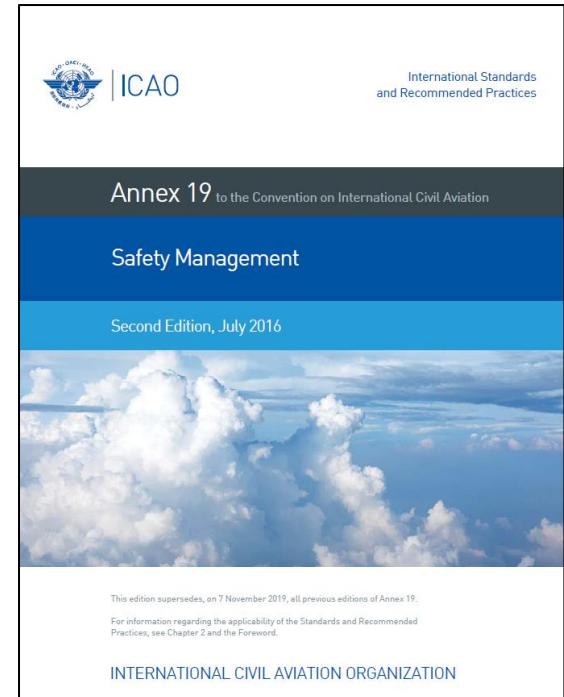


Annex 18 – One Part only

# ICAO Annexes

## Annex 19 - Safety Management System:

- This Annex is intended to assist States in managing aviation safety risks.
- The foundation of this proactive safety strategy is based on the implementation of a **State safety program** (SSP) that systematically addresses safety risks, including the necessary organisational structures, accountabilities, policies and procedures.



Annex 19 – One Part only



# ICAO English level



# ICAO English proficiency

- English is the de facto civil aviation language.
- Historically, insufficient English language proficiency on the part of the flight crew or the controller has contributed to a number of accidents and serious incidents (~70%), and in some instances, where recoverable emergency situations were not saved.
- In 2003, the ICAO has introduced language proficiency requirements for air traffic controllers, pilots and flight crew with the objective:
  - To improve the level of language proficiency globally and
  - To reduce the frequency of communication errors.
- The requirements for language proficiency for operational personnel are detailed in ICAO Annex 1 - Personnel Licensing.

# ICAO English proficiency levels (cont'd)

Level
Expert 6
Extended 5
Operational 4
Pre-operational 3
Elementary 2
Pre-elementary 1

- There are six skill areas:
  - Pronunciation
  - Fluency
  - Structure
  - Vocabulary
  - Comprehension
  - Interaction
- The proficiency scale ranges from Level 1 to Level 6. The individual's proficiency level will affect personnel licensing.

# ICAO English proficiency levels (cont'd)

Level
Expert 6
Extended 5
Operational 4
Pre-operational 3
Elementary 2
Pre-elementary 1

Flight crew, air traffic controllers and all others who use English in R/T communication on international routes must be at ICAO English Language Level 4 (Operational) or above.



- Reassessment Procedures
  - ICAO require that language skills of pilots and controllers rated at Level 4 are reassessed every three years.
  - Level 5 pilots and controllers - every six years.
  - Level 6, no further assessment of English language skills is deemed necessary.

# ICAO English proficiency levels (cont'd)

<b>Level</b>	<b>Pronunciation Structure</b> Assumes a dialect and/or accent intelligible to the aeronautical community.	<b>Structure</b> Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task.	<b>Vocabulary</b>	<b>Fluency</b>	<b>Comprehension</b>	<b>Interactions</b>
Expert 6	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.	Both basic and complex grammatical structures and sentence patterns are consistently well controlled.	Vocabulary range and accuracy are sufficient to communicate effectively on a wide variety of familiar and unfamiliar topics. Vocabulary is idiomatic, nuanced, and sensitive to register.	Able to speak at length with a natural, effortless flow. Varies speech flow for stylistic effect, e.g. to emphasize a point. Uses appropriate discourse markers and connectors spontaneously.	Comprehension is consistently accurate in nearly all contexts and includes comprehension of linguistic and cultural subtleties.	Interacts with ease in nearly all situations. Is sensitive to verbal and non-verbal cues, and responds to them appropriately.
Extended 5	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Basic grammatical structures and sentence patterns are consistently well controlled. Complex structures are attempted but with errors which sometimes interfere with meaning.	Vocabulary range and accuracy are sufficient to communicate effectively on common, concrete, and work-related topics. Paraphrases consistently and successfully. Vocabulary is sometimes idiomatic.	Able to speak at length with relative ease on familiar topics, but may not vary speech flow as a stylistic device. Can make use of appropriate discourse markers or connectors.	Comprehension is accurate on common, concrete, and work-related topics and mostly accurate when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events. Is able to comprehend a range of speech varieties (dialect and/or accent) or registers.	Responses are immediate, appropriate, and informative. Manages the speaker/listener relationship effectively.
Operational 4	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances, but rarely interfere with meaning.	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete, and work related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.	Produces stretches of language at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication. Can make limited use of discourse markers or connectors. Fillers are not distracting.	Comprehension is mostly accurate on common, concrete, and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users. When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension may be slower or require clarification strategies.	Responses are usually immediate, appropriate, and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming, or clarifying.
Pre-Operational 3	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation and frequently interfere with ease of understanding.	Basic grammatical structures and sentence patterns associated with predictable situations are not always well controlled. Errors frequently interfere with meaning.	Vocabulary range and accuracy are often sufficient to communicate on common, concrete, or work-related topics but range is limited and the word choice often inappropriate. Is often unable to paraphrase successfully when lacking vocabulary.	Produces stretches of language, but phrasing and pausing are often inappropriate. Hesitations or slowness in language processing may prevent effective communication. Fillers are sometimes distracting.	Comprehension is often accurate on common, concrete, and work related topics when the accent or variety used is sufficiently intelligible for an international community of users. May fail to understand a linguistic or situational turn of events.	Responses are sometimes immediate, appropriate, and informative. Can initiate and maintain exchanges with reasonable ease on familiar topics and in predictable situations. Generally inadequate when dealing with an unexpected turn of events.
Elementary 2	Pronunciation, stress, rhythm, and intonation are heavily influenced by the first language or regional variation and usually interfere with ease of understanding.	Shows only limited control of a few simple memorized grammatical structures and sentence patterns.	Limited vocabulary range consisting only of isolated words and memorized phrases.	Can produce very short, isolated, memorized utterances with frequent pausing and a distracting use of fillers to search for expressions and to articulate less familiar words.	Comprehension is limited to isolated, memorized phrases when they are carefully and slowly articulated.	Response time is slow, and often inappropriate. Interaction is limited to simple routine exchanges.
Pre-Elementary 1	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.



# Phonetic alphabet

CHARACTER	MORSE CODE	TELEPHONY
A	·-	Alfa
B	···	Bravo
C	····	Charlie
D	····	Delta
E	·	Echo
F	····	Foxtrot
G	···	Golf
H	····	Hotel
I	··	India
J	····	Juliett
K	···	Kilo
L	···	Lima
M	··	Mike
N	··	November
O	···	Oscar
P	····	Papa
Q	····	Quebec
R	···	Romeo
S	···	Sierra
T	·	Tango
U	···	Uniform
V	···	Victor
W	···	Whiskey
X	···	Xray
Y	···	Yankee
Z	····	Zulu
1	····	One
2	····	Two
3	····	Three
4	····	Four
5	····	Five
6	····	Six
7	····	Seven
8	····	Eight
9	····	Nine
0	····	Zero

- To avoid miscommunications in a global civil air transportation system, ICAO selected English as the official language of aviation.
  - Despite this action, letters of the alphabet and numeral pronunciation can be so easily misunderstood (such as hearing an "S" for an "F" or a "B" for a "D").
- Letters and numerals in aviation are spoken using the international phonetic alphabet.
- This alphabet substitutes an entire word to represent one letter. The numeral "nine" is pronounced "niner." The accepted reasoning is that "nein" is a common German word that means no. By eliminating that pronunciation, confusion was to be avoided.

# Aviation language

- Here is an example of how the Aviation Alphabet would be used between a pilot and the Air Traffic Control Tower:

Fun Air Pilot:

"Philly Tower, Fun Air 1234 Echo Romeo ready for take-off."

Air Traffic Control Tower:

"Fun Air 1234 Echo Romeo taxi via taxiway Juliet and hold short Runway 27 Right."

Fun Air Pilot:

"Roger Philly Tower. Taxiing via Juliet and holding short of Runway 27 Right."





# International Air Transport Association (IATA)

- IATA is a trade association.
- In 2020, IATA has 298 member airlines from 120 countries - primarily scheduled international airlines.
- Although it only present a small percentage of the entire airline industry, IATA members make up approximately 82% of total available seat kilometres (ASK) air traffic.
- The current members can be find via the following link: <https://www.iata.org/en/about/members/airline-list/>



- **Trade association** is an organisation founded and funded by businesses that operate in a specific industry to participates in public relations activities such as advertising, education, political donations, lobbying and publishing.
- It also enhances collaboration, between companies, networking and encourages standardisation.

# IATA (cont'd)

IATA is a private organisation promoting cooperation among the world's scheduled airlines to:

- Support many areas of airline industry.
- Help formulate industry policy on critical aviation issues.
- Ensure safe, secure, reliable, efficient and economical air services.

IATA represents, leads and serves the airline industry.



# IATA history

- IATA was founded in Havana, Cuba in 1945.
- The modern IATA is the successor to the International Air Traffic Association founded in the Hague in 1919 - the year of the world's first international scheduled services.
- IATA's headquarter and the executive offices are located in Montreal Canada and Geneva Switzerland.
- Mission is to represent, lead and serve the aviation industry.
- Five areas of high priority:
  - Safety
  - Security
  - Environment
  - Health and Safety
  - Simplifying the business





# IATA organisation structure

- IATA is led by the Director General & CEO.
- A guiding concept of IATA's structure is “Global Development, Regional Delivery”:
  - The Head Office divisions drive the development of global standards, systems and advocacy positions, while the regional and country offices are responsible for implementation.



Director General & CEO  
Alexandre de Juniac

## Divisions:

- Member and External Relations (MER)
- Customer, Financial and Digital Services (CFDS)
- Airports, Passenger, Cargo & Security (APCS)
- Safety & Flight Operations (SFO)
- Corporate Services

## Regions:

- North Asia
- Asia Pacific
- Africa & Middle East
- Europe
- The Americas

# IATA organisational chart



# Five areas of high priority - Safety

- IATA and its member airlines puts safety as the number one priority.
- To ensure safety for passengers, IATA put in place the IATA Operational Safety Audit (IOSA):
  - A global standard for airline safety audits and plays a major role in making flying even safer.
- IOSA assesses airline operational management and control systems uses, and it is a condition to get or maintain IATA membership.



# Five areas of high priority - Security

- In the years following 911, the heightened security has brought inconveniences for travellers:
  - Long security lines and confusing and inconsistent rules.
- IATA works together with ICAO to harmonise security measures across the globe with the goal of simplifying the entire travel experience.
- IATA works to improve the security process by replacing repetitive checks of passengers and their documents through better use of technologies like biometrics.
  - Allow information to be gathered and shared instantly with security service providers.



# Five areas of high priority - Health and safety

- IATA works closely with World Health Organization (WHO), the global authority on public health, on a range of issues including communicable diseases to help the aviation industry.



# Five areas of high priority - Environment

- The UN Intergovernmental Panel on Climate Change (IPCC) estimates that aviation's share of global CO<sub>2</sub> emissions will grow from today's 2% to 3% by 2050.
- IATA has set a goal for carbon-neutral growth enroute to a carbon-free future for its member airlines.
- IATA is tackling the problem from four ways:
  - Improve technology of both aircraft and aviation fuel
  - Improve operations by shortening routes and reducing aircraft wait times to limit the amount of fuel burned
  - Address airspace and airport deficiencies to eliminate up to 12% of CO<sub>2</sub> emissions
  - Create economic measures that can boost the research, development and deployment of new technologies





# Five areas of high priority - Simplifying the business

E-ticketing was introduced & has brought passenger check-in convenience to a new level

1995

1 June 2008

100% e-ticketing had been achieved by IATA airline members.

To continue on this success, IATA established a number of “Simplifying the Business” (StB) projects.

- **Bar Coded Boarding Passes (BCBP):** Boarding passes can be paperless and accessed from a mobile phone for faster, more convenient check-in.
- **Baggage Improvement Programme (BIP):** Aim to reduce the rate of mishandled baggage by improving handling processes.
- **Fast Travel:** The Fast Travel initiative aims to give travellers more control by designing a range of self-service options for passenger to manage many aspects of the departure and arrival processes.
- **IATA E-freight:** E-freight is the passenger e-ticket equivalent but for air freight services.





# IATA achievements

**UNITED** A STAR ALLIANCE MEMBER

Issue Date: March 27, 2012

Traveler BRINKER/ANTHONY	eTicket Number 0167026811334		
<b>FLIGHT INFORMATION</b>			
Day, Date Tue, 15MAY12	Flight UA1554	Class T	Departure City and Time WEST PALM BEACH, FL (PBI) 10:46 AM
<b>FARE INFORMATION</b>			
Fare Breakdown			
Airfare: U.S. Federal Transportation Tax: U.S. Passenger Facility Charge: U.S. Flight Segment Tax: September 11th Security Fee: Per Person Total:			
eTicket Total: The airfare you paid on this itinerary totals: 267.91 USD			
The taxes, fees, and surcharges paid total: 41.69 USD			
Fare Rules:	Additional charges may apply for changes if NONREF-0VALUAFTDPT-CHGFE Cancel reservations before the scheduled d		
Additional Charges:	Tue., May, 15, 2012/MasterCard 1896 was Checked Bag / EDD 0162607769842		

## E-ticket

- Through IATA, local airlines have combined their individual ticketing and reservation networks into a global system that overcomes differences many areas including records, currencies, customs, languages, and laws.
- Retiring old paper tickets allowed the modernisation of the air transport system.
- E-ticketing has largely replaced the older multi-layered paper ticketing systems - mandatory for IATA members since 1 June 2008.



## Travel agents

- IATA accredits the travel agents all over the world, except the US.

# IATA code

## Airport

- An IATA airport code is a three-letter code designating many airports around the world, defined by IATA.
- The characters prominently displayed on baggage tags attached at airport check-in desks are an example of a way these codes are used.



## Airline

- An IATA airline designators, or IATA reservation codes, are two-character codes assigned by the IATA to the world's airlines.
- The IATA airline designator form the first two characters of the flight number.
  - Use to identify an airline for all commercial purposes, including reservations, timetables, tickets, tariffs, air waybills, and in airline interline telecommunications.

# IATA code

## Airport

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- The characters prominently displayed on baggage tags attached at airport check-in desks are an example of a way these codes are used.



Airport Code Pro(IATA)

Airport Code	City/Airport Name
BWN	Bandar Seri Begawan
PNH	Phnom Penh
BJS	Beijing
CTU	Chengdu
CAN	Guangzhou
HKG	Hong Kong
BOM	Mumbai
DEL	Delhi
JKT	Jakarta
HIJ	Hiroshima
NGO	Nagoya
NRT	Tokyo
FNJ	Pyongyang
PUS	Busan
ICN	Incheon
CJU	Jeju City
VTE	Vientiane

# IATA code

IATA Code	Airline	IATA Code	Airline
AI	Air India	GA	Garuda Indonesia
BA	British Airways	KE	Korean Air
CX	Cathay Pacific Airways	MH	Malaysia Airlines
MU	China Eastern Airline	QF	Qantas Airways
CZ	China Southern Airline	QR	Qatar Airways
EK	Emirates	BI	Royal Brunei Airlines
EY	Etihad Airways	SQ	Singapore Airlines
BR	EVA Air	TG	Thai Airways



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# Airport Council International (ACI)

- ACI is the only worldwide association of airports.
- A non-profit organisation aims to represent the interests of airports and to promote professional excellence in airport management and operations.
- In 2019, ACI has 646 members who operate over 1,960 airports in 176 countries.
- Established in 1991, ACI represents airports interests with governments and international organisations such as ICAO,
  - Develop standards, policies and recommended practices for airports.
  - Provide information and training opportunities to raise standards around the world.
- Mission: To advance the interests of airports and to promote professional excellence in management and operation of airports.



# Organisation structure

ACI consists of a world office, and five regional offices:



- ACI World is located in Montreal, Canada.
- ACI Regional works with the key regulators and organisations in the region. Regional offices are located in:
  - Casablanca (ACI Africa)
  - Hong Kong (ACI Asia-Pacific)
  - Brussels (ACI Europe)
  - Panama City (ACI Latin America-Caribbean)
  - Washington (ACI North America)



# Organisation structure (cont'd)

- ACI world works in the global context with worldwide international organisations, namely ICAO, IATA and CANSO.
- The ACI World Governing Board consists of 28 representatives, who are nominated by the five ACI Regional Boards, and the immediate past Chair.
- ACI World Governing Board is led by the current Chair and Vice-Chair.

# Standing committees

- ACI has six standing committees, assigned by the ACI Governing Board:
  - Provide guidance and council.
  - Help shape current policy issues for Governing Board endorsement in their areas of expertise.
- The Standing committees are lead by a Chair and Vice-Chair.





# Standing committees (cont'd)

Airport IT

- Develop industry policy guidelines and positions on issues affecting information technology (IT), airport automation, telecommunications infrastructure and related passenger and cargo services at airports.

Economics

- Cover airport charging systems, noise and passenger service charges, consultation with users, development of revenues from concessions and other non-aeronautical sources such as statistics and forecasting.

Environment

- Develop ACI's policies on global aviation environmental issues including aircraft noise, aircraft engine emissions and air quality at airports, environmental management systems, ground water management, waste management, wildlife management etc



# Standing committees (cont'd)

Facilitation & Services

- Cover facilitation of passengers and their baggage, freight and mail, quality of service at airports, automated services integration for passengers and baggage, surface access to airports and inter-modal issues, dangerous goods, measures to combat drug trafficking, slot allocation and schedule coordination, and the inter-relationship between facilitation and security.

Safety & Technical

- Concern with airport planning, design and development, airspace and airport capacity, physical characteristics of runways, taxiways and aprons, aircraft/airport compatibility issues, visual aids for navigation, future air navigation systems, airport equipment and installations, safety management runway and apron, aerodrome emergency planning, rescue and fire-fighting.

Security

- Security in airport design, passenger and baggage screening, access control, security technology, the impact of security on airport facilitation, biometric applications for security, cargo security, contingency planning for natural disasters, measures to combat biological and chemical threats to aviation.

# ACI vs IATA

ACI is still young when compared to the well-established IATA, plus airports are different to airlines.

- States still consider airports as national assets especially for the facts that international airports are profitable, and for reasons of state security and immigration.
- No international certification of airport operational quality. Airports are of wide classifications in term of size, purpose, and complexity of operational types.
- A lots of work are still needed in the area of airports to enhance safety. The gap is too wide between airline development and airport development
- International airports have international zones for individuals who have not cleared customs and immigration of the hosting country.



# Other prominent international associations

## **The Air Transport Action Group (ATAG)**

- A not-for-profit association that represents all sectors of the air transport industry.
- ATAG's members include airports, airlines, manufacturers, air traffic management organisations, airline pilots and air traffic controller unions, tourism organisations, ground transportation and many other organisations from all sectors of the air transport industry.

## **The Civil Air Navigation Services Organisation (CANSO)**

- The global voice of air traffic management.
- Founded in 1996, it represents the interests of the Air Navigation Service Providers (ANSPs) worldwide.
- CANSO's Objectives:
  - The voice of Air Navigation Service Providers
  - Support the improvement of global ANS performance
  - Optimise the effectiveness of the organisation

*Thank  
you!*

