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# NACC Presentation, Mexico City

## ICAO updates to Annex 8, C2 Link, and DAA

28 September 2021

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# Updates to Annex 8



# Annexes

- Annex 1- Licensing
- Annex 2- Rules of the Air.....



- **Annex 8 - Airworthiness**



# Annex 8- Airworthiness

- Traditionally, Annex 8 provided information on Airworthiness, and also covers topics such as Certification, Production, and Maintenance of aircrafts and helicopters
- The introduction of RPAS has created a need for this document to be updated



# Annex 8 update

- Updates to Annex 8 were required to incorporate RPAS
- On 12 July 2021- Amendment 108, to Annex 8 was approved to include:
  - Requirements for remotely piloted aeroplanes,
  - remotely piloted helicopters
  - remote pilot stations (RPS);
  - C2 Links; and
  - a template for the RPA certificate of airworthiness



# Scope and limitations

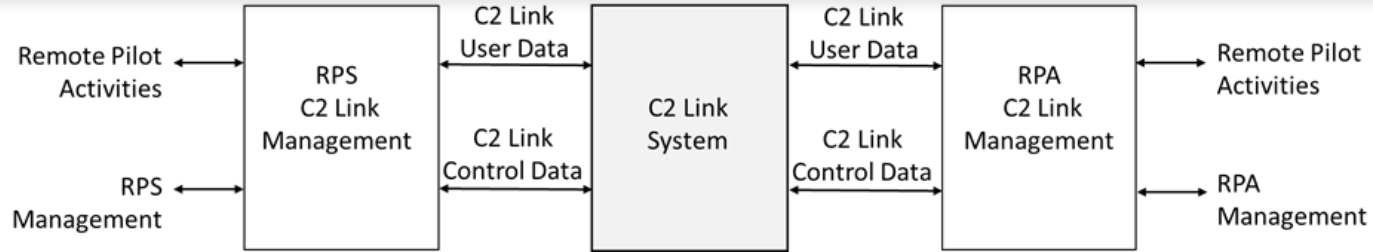
- Current guidance limits RPAS to instrument flight rules (IFR) operations at this time
- Future rules will have to expand the scope of operations, to incorporate smaller UAS
- Although Amendment 108 was approved on 21 July, 2021, States have until 2026 to adopt these rules



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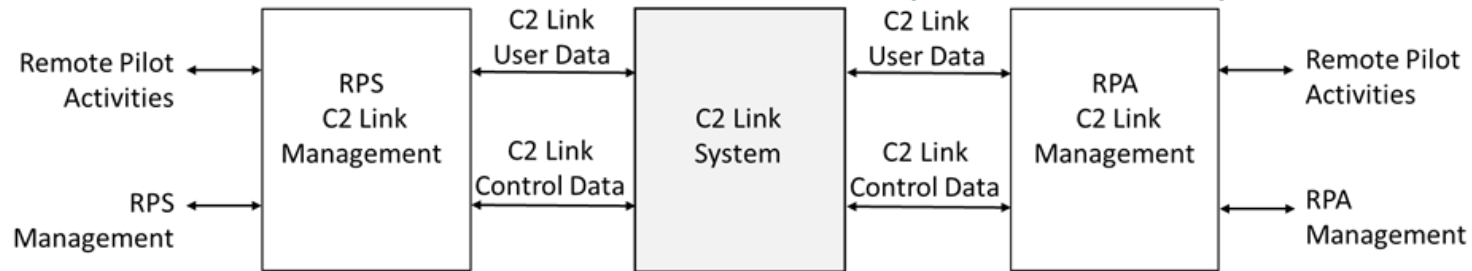
# C2 Link



- The C2 Link is a “black box” connecting the RPS and the RPA
  - Supports all remote pilot activities required to safely manage the RPA
  - Supports external management of its operation by the RP/RPS and RPA
- Neither “end” of the C2 Link needs to be standardized in SARPs
  - The C2 Link is entirely inside the RPAS and does not need to directly connect with other standardized aeronautical systems

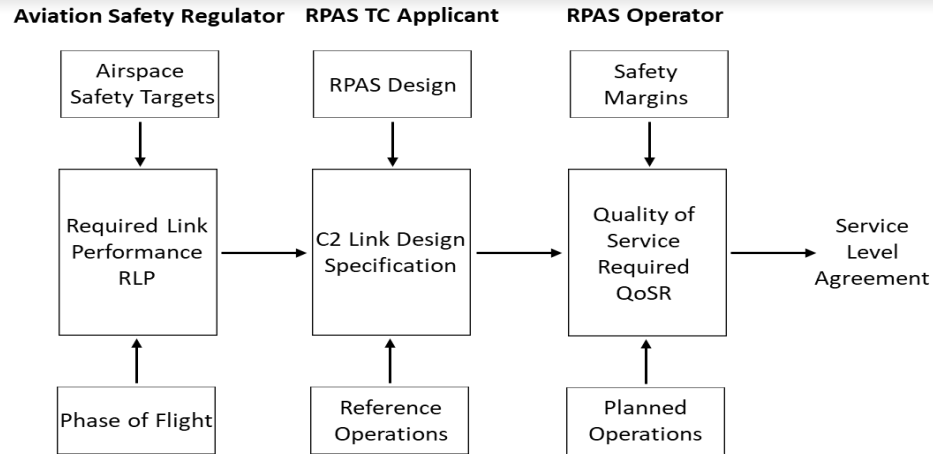


# C2 Link SARP's and Manual – Background (continued)



- RPASP and RTCA have developed the Required Link Performance (RLP) concept for the User Data
  - Same RLP for all RPAS/C2 Links operating in the same airspace/phase of flight
  - All RPAS are equally “safe” irrespective of their design or their C2 Link design
- The C2 Link is Managed by the RP/RPS and RPA
  - Currently only how and how well the C2 Link responds to Control Data is part of the proposed SARP's and Manual on C2 Links for RPAS
    - » Will be part of the Type Certification of the RPAS

- The required performance of a C2 Link is highly dependent on
  - The Target Level of Safety in the airspace = RLP
  - The phase of flight = RLP
  - The pilot activity it is supporting = RLP
  - The level of automatic capability in the RPA and RPS = C2 Link Specification
- The RLP is developed by ICAO/Member States
  - The RPAS Designer specifies the, RPAS design dependent, C2 Link Specification





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# Working Group 3, Detect and Avoid (DAA)



# Detect and Avoid System

- Detect and Avoid (DAA) system, will be located in Annex 10 — *Aeronautical Telecommunications, Volume IV — Surveillance and Collision Avoidance Systems, Part 2, Detect and Avoid Systems*, in the future
- DAA discussions in this presentation are based upon RPAS operations, system descriptions, operating environments, control methods, and interfaces with ANSPs
- The scope of DAA operations currently covers IFR operations only



# DAA definition

- A DAA system is defined as all airborne and ground-based equipment that together perform the functions which allow the Remote Pilot to detect and avoid hazards. This includes sensors, processing units and the interface with the Remote Pilot.

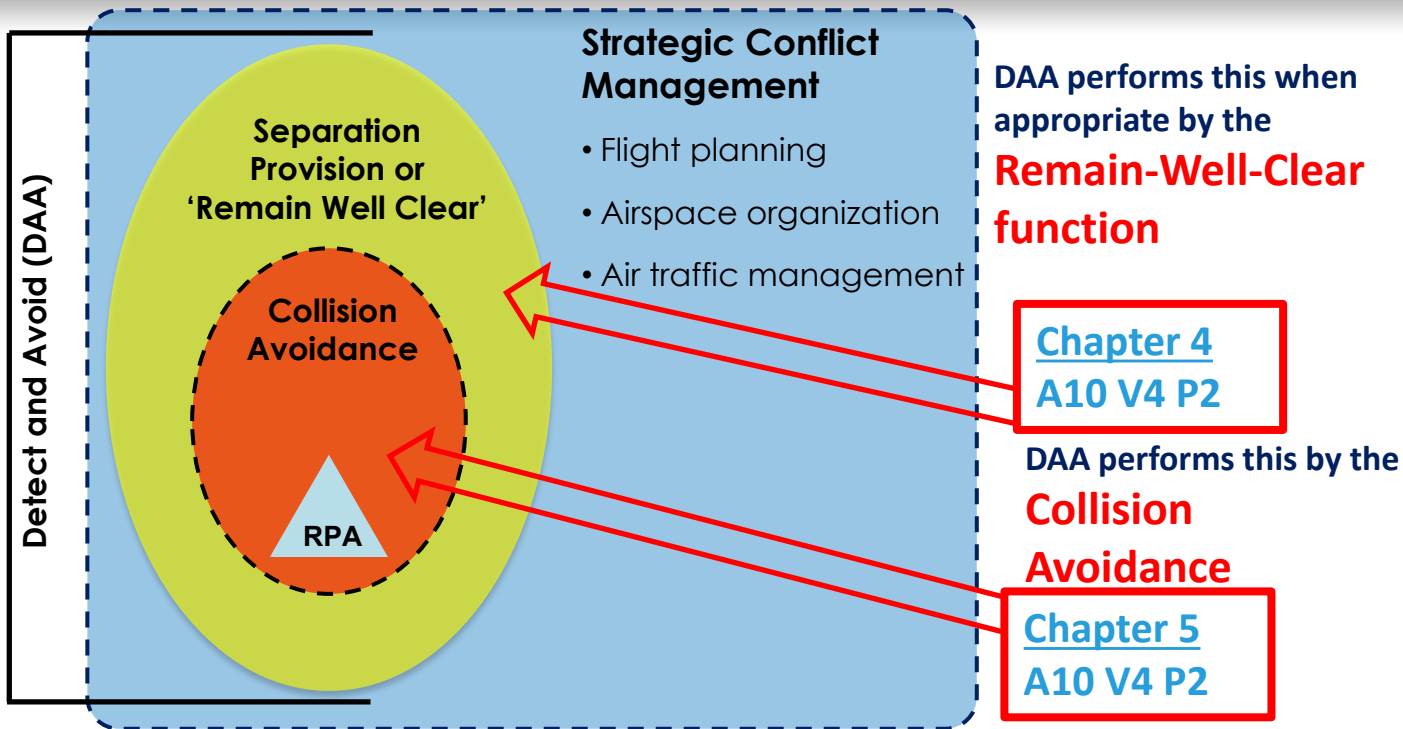


# DAA harmonization

- DAA is heavily based on traditional concepts of ACAS systems
- New aircraft, non-traditional approaches to aviation, and an altered operating environment, has required the community to develop new standards for DAA
- These standards are harmonized with standards development organizations (SDO) such as RTCA, SAE, EUROCAE, and others. Future ICAO SARPS will be heavily dependent on the decisions taking at these prominent SDOs



# Remain Well Clear (RWC)



*In addition to those two DAA functions, DAA system includes "Traffic Surveillance".*

**Chapter 3 A10 V4 P2**

## 10.3 DAA INTEROPERABILITY

Three leading principles apply:

- a) The introduction of a DAA equipped RPA **will not impose an undue burden on the aviation system** that may be associated with the operation of a manned aircraft.
- b) **The impact on other actors** in the aviation system, including ATC **will be minimized** when designing and introducing DAA systems.
- c) **The effectiveness of current safety barriers**, in particular ACAS, **will not be jeopardized**.






## Poll question

- Which Annex contains provisions for Airworthiness
  - Annex 2
  - Annex 5
  - Annex 8 




# Polling question

- Which of the following is the best correct answer that identifies the airworthiness requirements for RPAS operations in IFR?
  - Airframes must comply with aircraft airworthiness certification.
  - Engines must be certified.
  - Navigation and communications must fully comply with IFR standards.
  - All of the above. 



## C2 Link Polling question

- Where must a C2 Link provide the least reliability?
  - On the ground 
  - During takeoff and landing
  - During a cross-country flight



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