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ICAO RPAS SARPS



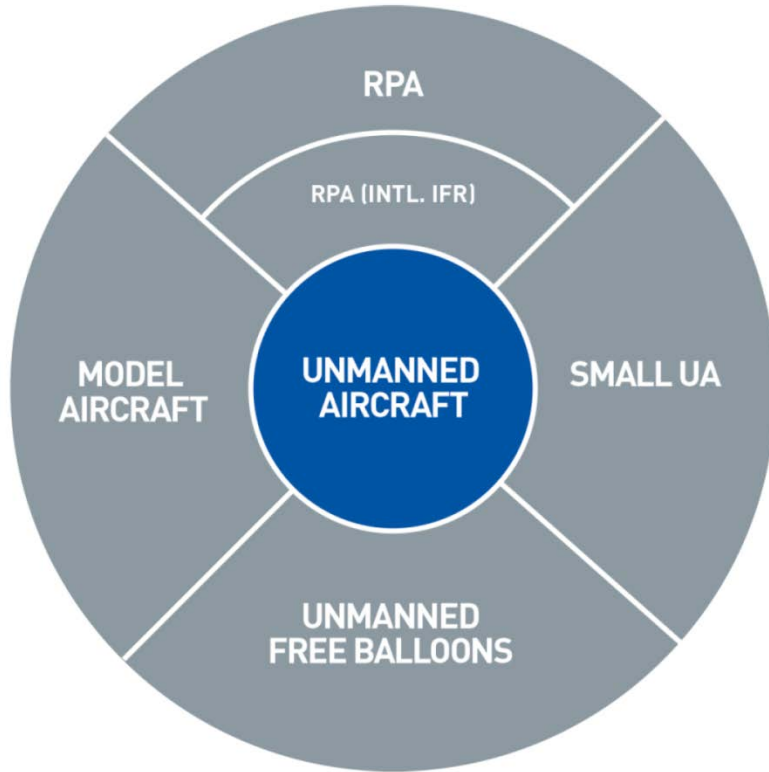
17 November 2020



Webinar overview

- The role of ICAO to support RPAS operations development (**why?**)
- **What ICAO is doing** to support RPAS operations development (standards development)
- **How ICAO is supporting RPAS** operations development (the RPAS Panel)

RPA are aircraft



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.

Unmanned aircraft. An aircraft intended to be operated with **no pilot on board**:

- **A remotely piloted aircraft (RPA)** is part of an **RPAS (system)**; piloted from a RPS
 - subset of RPA intended for **international, instrument flight rules (IFR)** operations; full regulatory **certification**
- **Small UA**: generally <25 kg (commonly “drones”)
- **Unmanned free balloons**: non-power driven, unmanned, lighter-than-air aircraft in free flight
- **Model aircraft**: scaled down version; recreational



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Foundations of ICAO's mandate

Chicago Conv.
Art. 29

Documents for
int'l navigation

"obviate danger &
special authorization"

Chicago
Conv. Art. 8

"minimize hazards &
accord. A2 App. 4"

Annex 2,
para. 3.1.9

ROC < CofA < Licence

DAA < C2 < Emerg. proc.

Noise < Security < Insurance

Annex 2,
App. 4

"consistent with the
provisions of related
Annexes"



Article 8

Pilotless aircraft

No aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorization by that State and in accordance with the terms of such authorization. Each contracting State undertakes to insure that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled as to obviate danger to civil aircraft.

- **Special authorization from overflown State**
- **Flight controlled so as to obviate danger**



Every aircraft of a contracting State, engaged in **international navigation** shall carry the following documents:

- a)* Its certificate of registration;
- b)* Its certificate of airworthiness;
- c)* The appropriate licenses for each member of the crew;



3.1.9 Remotely piloted aircraft

A remotely piloted aircraft shall be operated in such a manner as to minimize hazards to persons, property or other aircraft and in accordance with the conditions specified in Appendix 4.



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Annex 2 (Appendix 4) to the Chicago Convention

2.1 An RPAS shall be approved, taking into account the interdependencies of the components, in accordance with national regulations and in a manner that is consistent with the provisions of related Annexes. In addition:

- a) an RPA shall have a certificate of airworthiness issued in accordance with national regulations and in a manner that is consistent with the provisions of Annex 8; and
- b) the associated RPAS components specified in the type design shall be certificated and maintained in accordance with national regulations and in a manner that is consistent with the provisions of related Annexes.

2.2 An operator shall have an RPAS operator certificate issued in accordance with national regulations and in a manner that is consistent with the provisions of Annex 6.

2.3 Remote pilots shall be licensed, or have their licences rendered valid, in accordance with national regulations and in a manner that is consistent with the provisions of Annex 1.



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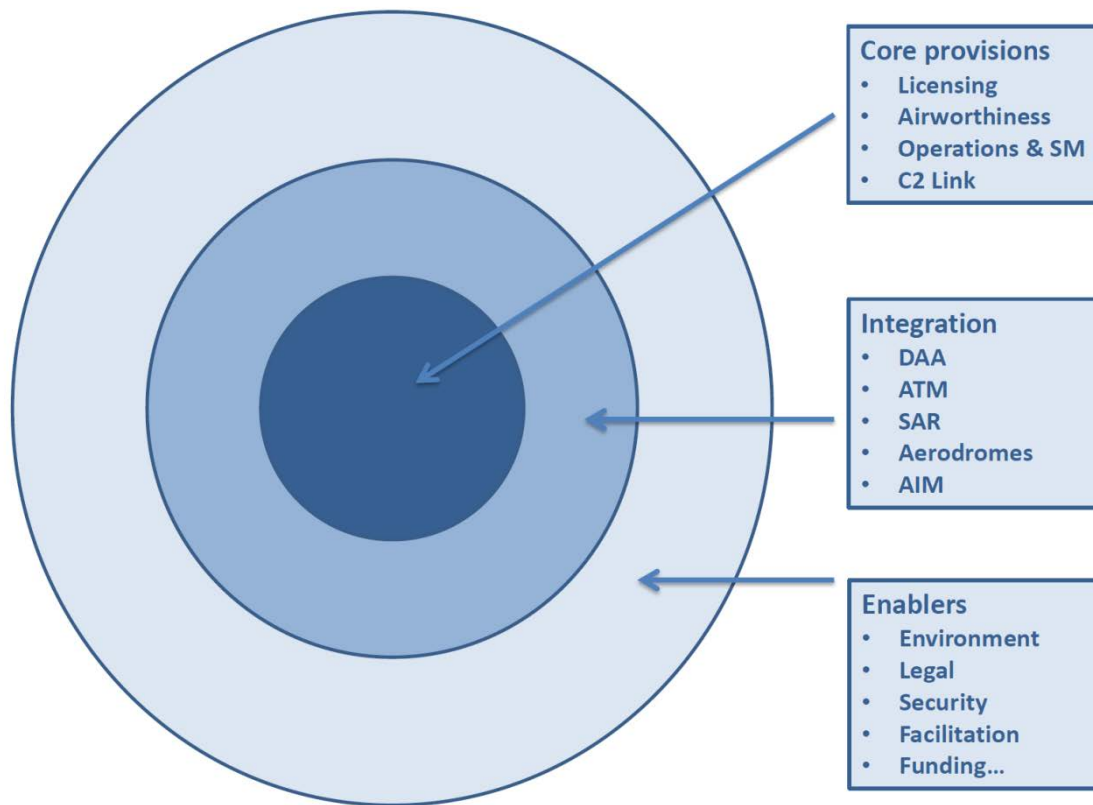
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ICAO's layered approach



- **Core provisions for international air navigation**
- **Key requisites for safe integration**
- **Longer-term enablers**

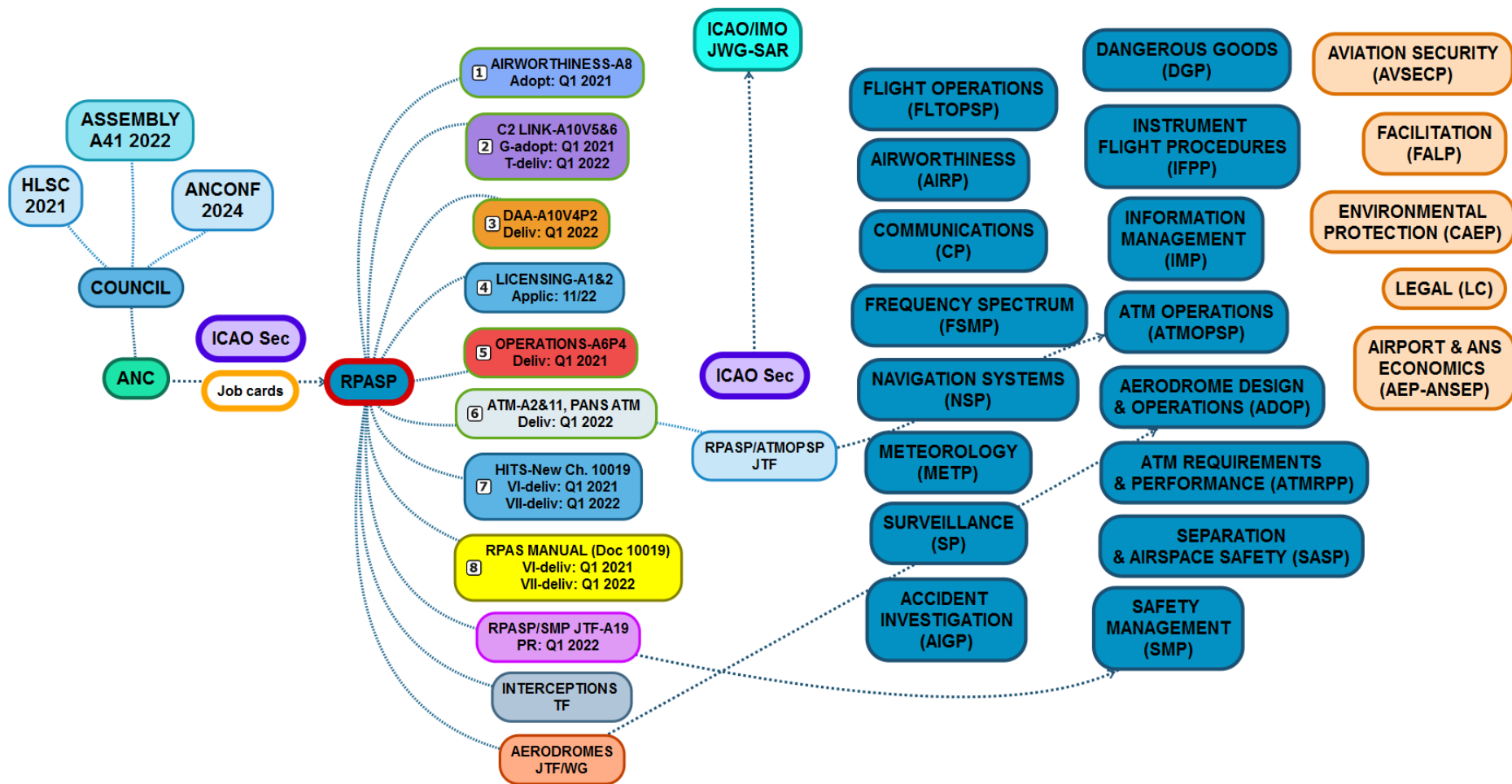


How is ICAO doing it?

- ICAO **RPAS Panel** brings together **regulators and industry**
- 26 States from all 6 regions, ensuring **geographical** representation and **diversity** of points of views/development stages
- Major aviation **industry** organizations: IATA, ACI, CANSO, EUROCONTROL, EASA, IFALPA, IFATCA, IAOPA, RTCA, EUROCAE, NATO, AUVSI, UVS
- **RPAS panel** acts as a **focal point** and **coordinator** of RPAS work



- International IFR operations
- Controlled airspace and aerodromes
- Global interoperability
 - RPA to operate alongside manned aircraft, as a predictable, cooperative airspace user: All **19 Annexes** affected
 - Priority given to **fundamentals** to initiate **international** operations
 - » **Remote pilot licence** – adopted March 2018
 - » **Certificate of airworthiness** – adoption Q1 2021
 - » **C2 Link** – adoption Q1 2021
 - » **RPAS operator certificate** – delivery Q1 2021





ICAO RPAS Timelines

	2020	2021	2022	2023	2024	2025	2026
Licensing			Applicable				
Airworthiness		Effective					Applicable
C2 Link (gen.)		Effective					Applicable
Operations					Effective		Applicable
Safety management					Effective		Applicable
C2 Link (techn.)						Effective	Applicable
DAA						Effective	Applicable
ATM						Effective	Applicable
Other prov.	Meteorology, Charts, Facilitation, Accident investigation, Aerodromes, AIM, Environment, Security, Dangerous Goods...						



- ***Manual on Remotely Piloted Aircraft Systems*** (Doc 10019), being updated
- RPASP (secure **portal**)
- RPASP **timelines**, being updated
- ***ICAO Unmanned Aviation*** web page www.icao.int/safety/UA
 - RPAS CONOPS for International IFR Operations
 - Model UAS Regulations
 - U-AID
 - UAS Toolkit
 - UTM guidance
 - ICAO Webinars



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Deliverables of RPAS Panel

Area	Provision	Reference
RPAS	Annex 2, App. 4	Annex 2, App. 4
Registration	Annex 7	Annex 7 (2.2 & 2.3)
Accident investigation	Annex 13	Annex 13 (Def. & 5.1.2 note 3)
Licensing	Annex 1 (Amdt. 175)	AN 12/1.1.23-18/11
Airworthiness	Annex 8	AN-WP/9439
C2 Link	Annex 10	AN-WP/9440
Operations	Annex 6	RPASP/16-WP/6
Detect and avoid	Annex 10	RPASP/16-WP/7



The Innovation Cycle:

1. **Technology** enables new operations (use **cases**)
2. **Operations** require regulatory development (**data-driven, evidence-based**)
3. **Safety** creates public confidence (**trust**)
4. **Public confidence** allows market expansion (**investments**)
5. **Investments** support technology advancements (**R&D**)

Conclusion



The challenge of integrating **unmanned aircraft** into the aviation system requires:

- **technical** expertise
- **intergovernmental** framework
- **global** geographic coverage
- **regulators & industry** cooperation



DRONE ENABLE 2021

April

www.icao.int/Meetings/DRONEENABLE4



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Online Course

www.icao.int/training

Air Navigation Services
Unmanned Aviation Fundamentals



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THANK YOU