



AN- CONF/14

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Advanced Air Mobility (AAM) Unmanned Aircraft System (UAS) UAS Traffic Management (UTM)

ANB/ANS/RPAS

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AAM, UAS and UTM

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01 Background

Historical & background considerations

- Pilotless aircraft → Art 8. Chicago Convention
- Past 80 years (almost) built a safe and reliable aviation framework: international air operations
- Last 18 years+: UAS Study Group followed by the RPAS Panel
 - Developed, and still developing, Remotely Piloted Aircraft System SARPs : *Certified International, IFR, operating in controlled airspace.*



International high risk (Certified)	International medium/low risk
Domestic high- risk (Certified)	Domestic medium/low risk

Historical & background considerations (cont'd)

- Call by States at Divisional-Type meeting and Assemblies for ICAO to expand work on matter related to “non-RPAS” UAS
- 41st Assembly of ICAO (2022) with respect to AAM, called for *an expert group to develop a holistic vision, framework, as well as to advise ICAO on activities in this area and conduct a gap analysis on existing practices and provisions and on what might be required.*
- ICAO’s Air Navigation Commission (ANC) acted on the Assembly’s request by authorizing a study group in November 2022
- AAM Study Group (AAM SG) established by the ICAO Secretary General end-2022.
 - 170 experts
 - In-person meeting every 6 months.
 - Expecting to deliver first outcomes late-2025.

AAM Study Group (AAM SG) – Terms of Reference

The AAM SG will support the ICAO Secretariat to develop a holistic vision and framework related to AAM, and:

- a) **serve as a focal point** for ICAO AAM-related work with the aim of ensuring global interoperability and harmonization;*
- b) **perform an assessment of the AAM ecosystem**, including, as deemed necessary, subsets (such as urban air mobility (UAM)) and enablers (such as unmanned aircraft system (UAS) traffic management (UTM), automation and autonomy, information and data management, artificial intelligence (AI), etc.);*
- c) based on the outcomes of the previous step, **perform a gap analysis** between existing practices, ICAO provisions and what might be required from ICAO;*
- d) **develop initial guidance material** and the outline of a global framework, as deemed necessary; and*
- e) **develop recommendations** for an ICAO AAM strategy and on future work.*

02

Where are
we on UAS?

UAS (non-RPAS) and UTM

- UAS:
 - Model regulations: [ICAO Model UAS Regulations](#)
 - Humanitarian (U-AID package)
 - Training and implementation support (iPack)

ICAO UAS iPack: [Unmanned Aircraft Systems Regulatory Framework \(icao.int\)](#)

4 ICAO Unmanned Aviation online courses
Self paced
Overview, SMS, operations, regulations



Scan to view
the courses



- UTM Framework
 - Developed from Drone Enable Symposia
 - ED 4: [UTM Framework Edition 4.pdf \(icao.int\)](#)
 - Final editions coming shortly
 - Harmonized guidance to States/Operators

ICAO Unmanned Aviation Fundamentals course
Instructor led
Virtual or in-person



Scan to learn more



Additional ICAO tools and documents in support to UAS operations

- Application for U-AID Authorization (Focus on Humanitarian operations)
- Examples of SMS
- Decision making tools
- UA accident reporting form
- UAS toolkit
- Other guidance (APAC, WFP, GlobalMedic)

<https://www.icao.int/safety/UA/Pages/default.aspx>

Most recent work as part of the AAM SG

03

What is
AAM?



Credit: NASA

What's AAM?

REGIONAL AND
CROSS-BORDER
CARGO AND
PASSENGER
TRANSPORT



CONSUMER/
ENTERPRISE
GOODS AND
SERVICES



PUBLIC
GOOD and
MEDICAL
SERVICES



LOCAL
PASSENGER
TRANSPORT

Nowcast

Vertiport

5G/6G comms capabilities

14

What will have to be tackled?

Autonomy

Interfaces

New Flight rules

Microweather

Autonomy

Role of the human

Conflict
management

Role of the pilot

New operations

Skills and training

Electric propulsion

Information and
Data
Management

DAA

Multi-level of
governance

V2V

Certification

Facilitation

Traffic
management

Legal framework

Airworthiness

Interaction

Social acceptance

New
infrastructure

Cyber

Self-separation

Security

Economic model

Infrastructure

New services

New source of
energy

Key enablers

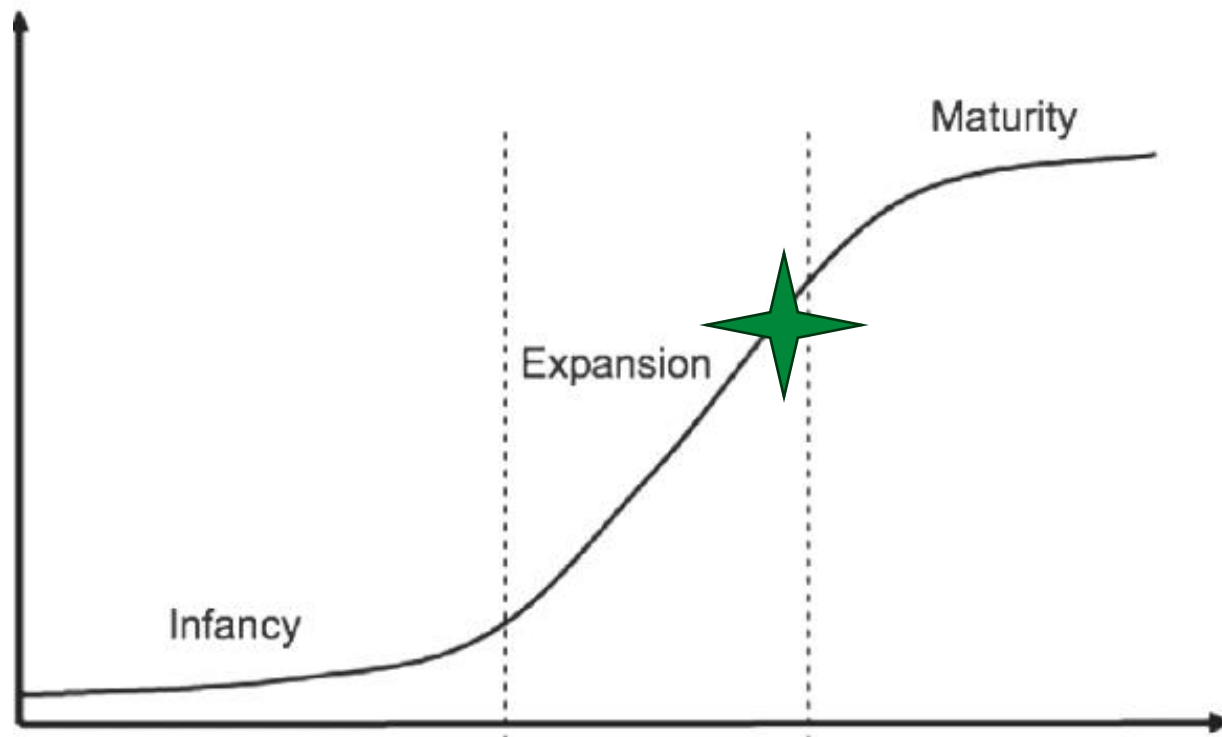
Interoperability

Are we starting from scratch?

- Chicago Convention and its Annexes
- ICAO Expertise and established mechanisms
- Need to innovate
- International aviation framework
- New thinking but not a revolution

How is this different from ICAO's usual work?

- A new ecosystem with new paradigms
- High connectivity
- Digital born
- Leveraging technological advances
- New capabilities coming with new requirements
- New needs
- ICAO's engagement moment



Why ICAO?

- Critical foundation for international operations
 - ICAO to lift potential roadblocks and regulatory showstoppers and identify the bottlenecks
- Foster global harmonization (regulatory concept and framework) and interoperability
- New regulatory approaches
- Build an understanding of the landscape of the future aviation ecosystem
- Be the coordinating forum between stakeholders (States, SDOs and industry)

Why ICAO? (cont'd)

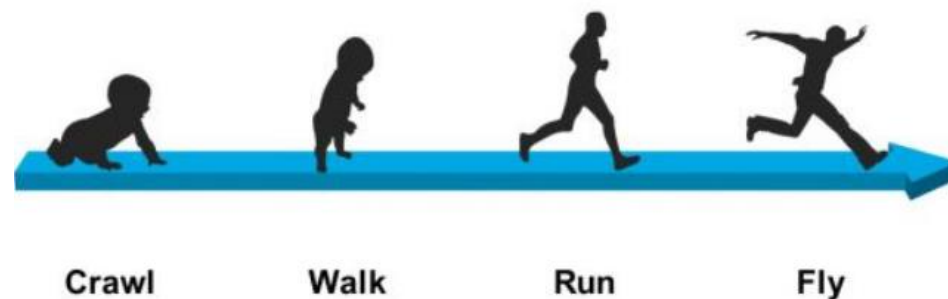
- Foster strategic convergence of the AAM ecosystem and the conventional aviation ecosystem
- Industry & interoperability
- No Country Left Behind

04

A phased approach

Overall Phases of Work

Crawl, walk, run, fly approach



Phase 1 : Initial phase:

- better understand the problem (assessment)
- develop a holistic vision
- gap, recommendations for work and strategy
- initial guidance development and draft global framework

Phase 2 : Structuring the work, if necessary:

Roadmap, ICAO Strategy, ...

Phase 3 : Development phase, if necessary.

Topics being currently considered by the AAM SG

- Assessing the AAM Ecosystem (not only the aircraft)
- Holistic vision of the AAM ecosystem evolution report
- UAS regulatory framework gap analysis
- UTM implementation guidance material
- Early implementation Guidance on eVTOL operations in current ATM environment
- Exploring areas: autonomy and automation, new flight rules, the role of the pilot, information and data management, the link between AAM and the UN SDGs...
- Support ATMRPP on Global ATM Operational Concept (GATMOC) update for AAM related considerations
- Coordination with many ICAO expert groups: ADOP, RPASP, GANP SG, TFP, IMP, FLTOPSP, ATMOPSP...

05 Collaboration

Collaboration

- Multilateral engagement with other UN agencies, international Organizations and relevant other stakeholders

06

Next steps & Conclusions

Next steps

- Guidance material: eVTOL and UTM
- Enhancement of existing material: UAS Model regulations, Humanitarian package
- Implementation support on RPAS framework, and other ICAO documents (UAS model regulations)
- AAM SG will deliver its assessment, gap analysis and recommendations for work to the Organization
- Report the gap analysis at the next high-level meeting after completion

Conclusions

- AAM and New Entrants PFA
- On-going work related to AAM, including UAS and UTM continues
- AAM goes beyond eVTOL, not an aircraft → an ecosystem. Includes many new entrants.
- AAM SG has been established. Appropriate governance established, and will be adjusted it as work progresses
- Coordination established with relevant expert groups
- All 19 Annexes are anticipated to be impacted.
- ICAO is not working alone and will not do everything
- ICAO is the forum to develop a globally harmonized and interoperable framework
- ICAO leverages its experience and will work in sync with existing activities and structures.
- Strategic convergence between AAM and conventional aviation ecosystems will be central to support harmonization, interoperability and safety
- The ANC is regularly updated on the AAM activities through recurrent briefing
- The Council will be kept apprised according to Organization's mechanisms

Thank You

