UNMANNED AVIATION 2022

DRONE ENABLE 2022

UTM/UAS - What's New at ICAO

Introduction

- UAS-AG Background
- DE 2021 - Outcomes
- DE 2022 RFI – Summary
- DRONE ENABLE Webinar Series
- UTM Framework - Summary
- UTM Framework – Edition 4 - Overview
- Other related efforts

UAS-AG Background

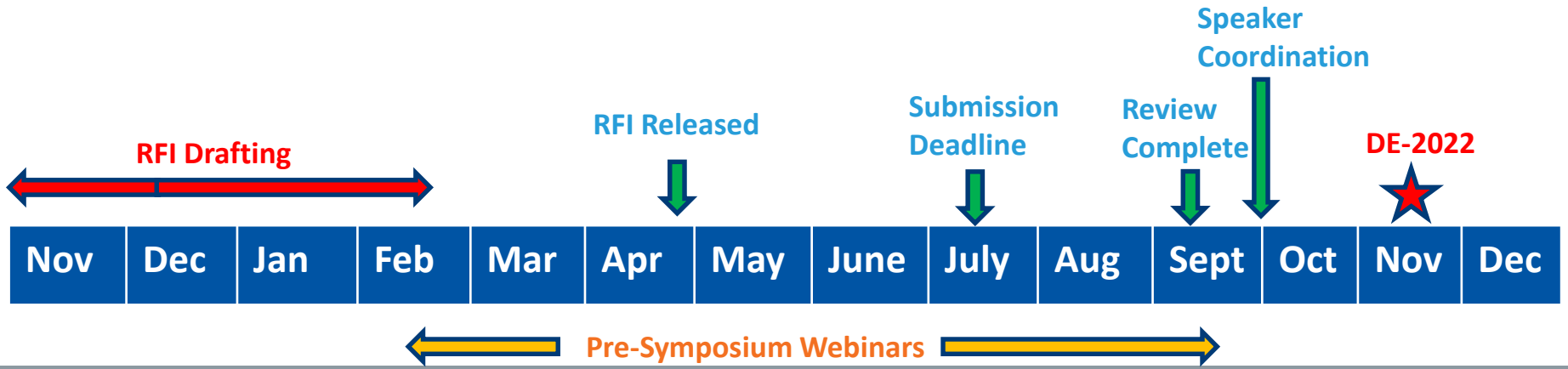
- Formed in 2015 with the intent of:
  - sharing best practices
  - assisting States by developing guidance material for UAS operations
  - expediting development of provisions to be used to regulate UAS
- Several High Level Conferences, requested that ICAO develop a global baseline for UAS.
  - Includes the ongoing work to address UTM
- Includes States, operators, researchers, industry and academia
- Non-conventional means to expedite guidance material

DRONE ENABLE 2021 Outcomes

- *Facilitating Future Innovation*
- Panels
  - Key Stakeholder
  - UTM Lessons Learned
  - Advanced Air Mobility
- RFI Sessions
  - Results
- Roundtables
- All sessions are available for viewing

DE 2022 RFI - Summary

- Two problem statements identified
- 33 submissions received - 16 selected

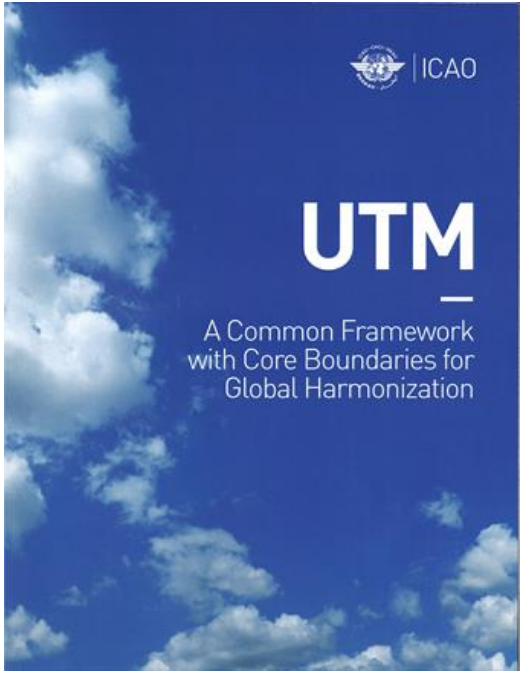


DRONE ENABLE 2022 - Webinar Series

Date	Time	Topic
8 Mar	*10:00-11:30*	*ATM-UTM interface*
7 Apr	*10:00-11:30*	*UAS Separation Provision Service*
26 Apr	*10:00-11:30*	*How AAM is to be managed - Are ATM or UTM a solution*
10 May	*15:00-16:30*	*UTM Operational Safety Analysis*
1 June	*10:00-11:30*	*Certification of Automated Systems*
28 June	*10:00-11:30*	*UTM Aerodrome Activities*
14 Sept	*10:00-11:30*	*Electronic Conspicuity*
19 Oct	*10:00-11:30*	*UAS to Provide Greater Efficiency*

UTM Framework

- A framework and core capabilities of a “typical” UTM system
- High level UTM requirements and considerations
- Not a technical solutions document



UTM Framework - Objectives

- Foster common framework and harmonization of core UTM principles
- Maintain safety and minimize disruption to existing aviation system
- Support technological developments in UTM and UAS
- Provide safety-focused recommendations for UTM system development
- Address security and environmental risks
- Enable stakeholders to grow safely and efficiently

UTM Framework – Previous Editions

EDITION 1 (RELEASED)

- Registration, identification and tracking
- Communications systems
- Geofencing-like systems
- Potential architectures

EDITION 2 (RELEASED)

- UTM-ATM boundaries and transitions
- Information exchange between ATM and UTM

EDITION 3 (RELEASED)

- UTM risk assessment/contingency procedures
- UTM service providers structure
- Separation and deconfliction in UTM

UTM Framework – Edition 4

- UA performance requirements in a UTM environment
- UTM system certification requirements
- UTM in aerodrome environments/activities

Other Related Efforts

- Several UAS related training courses
- UAS iPack
- UAS Model Regulations
- U-AID Guidance

AAM White Paper

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Thank You!

ICAO

Performance Requirements

- Performance requirements needed for both the unmanned aircraft and the UTM system
  - How will the two sets of requirements be interconnected?
- A mix of performance based and prescriptive requirements likely needed
  - What's important…the measurement or the output?
- A phased approach would allow:
  - Time to implement
  - Room to grow
  - Facilitate continued innovation

UA Performance Requirements

- UA will need to meet some level of performance requirements to be effectively integrated into the UTM system
- CNS type requirements to be considered:
  - UA C2 Link (performance, reliability, latency, etc.)
  - Performance Based Navigation (PBN)
  - Required Navigation Performance (RNP)
  - Surveillance aspects
- Variety of other UA elements also need to be considered when determining performance requirements
  - Technical capabilities, contingency performance, meteorological limitations, units of measure, etc.

UTM Performance Requirements

- UTM systems will deliver several different services:
  - Individual UTM services/functions will need to meet specific performance requirements (to meet safety objectives)
  - Interaction between various services may need to be considered, from a performance perspective
- The entire UTM ecosystem will be required to meet a specified level of performance (overall safety standard)
- Communications performance between key players
- Separation provision/standards and collision avoidance
- Airspace classification considerations