



ACI EUROPE DRONES TF – CONOPS

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Contents

- ACI Policy Paper (2018)
- ACI Position Paper ► Drone Technology (2018)
- Drones Taskforce
- Drones CONOPS for airports



ACI Policy Paper on Drones (2018)

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https://aci.aero/wp-content/uploads/2018/08/ACIPolicyPaper_Drones_2018-1.pdf



→ ACI Europe – Drone Technology (2018)



<https://www.aci-europe.org> ▶ Policy Papers ▶ ATM, SES & Sesar



→ ACI EUROPE Position

- Address the **diversity of drones** and their **different implications** for airports
- Ensure **understanding of safety- & security risks**
- **Prevent safety / security incidents** and **minimize disruption** to airport operations
- **Facilitate** the deployment and integration of drones in airport operations
- **Promote** the integration of drones into the controlled airspace for **professional commercial / operational purposes**



→ Protecting Airports from Drones

- Need to address **roles and responsibilities** through guidelines and benchmarking.
- Airport-specific protection policies incl. **standardized restricted zones**
- **Technical systems to detect and neutralize drones** (law enforcement authorities)
- **Guidance from authorities** on what counter-drone technology/measures can use



→ Facilitating Airport Drone Use

- Need to **address operational issues** including:
 - > Safety cases
 - > ATC procedures
 - > Authority approvals
 - > Technology adoption
- **Facilitate** approval of **simple, lower-risk operations**
- Develop standard **Use Cases** with risk assessments
- Promote industry **best practice**
- Ensure **training of airport staff**



→ Safe Integration of Drones and Airport Ops

- Requirements proportionate to risk
- No European fragmentation
- Effects on airfield/airspace capacity must be considered
- Develop **operational concepts** in collaboration with:
 - > Airports, ANSPs, Airlines, Authorities
- Operations **authorised by airport operator** with ANSP where appropriate



Objectives of the Task Force

- Address the **safe and secure integration** of drones at European airports
- Examine **technical and regulatory measures** necessary for the **protection of airports** from **unauthorised and malicious drone activity**
- **Develop ConOps, Use cases, Guidance Material**
 - > Operations at airports which may be carried out or facilitated by drones
 - > Protection of an aerodrome from unauthorised or malicious drone operations
- Facilitate the testing and **validation of Use Cases**
- Provide an **interface and expertise** to the relevant **EASA rulemaking**

+++

TF Members : Airports, ACI Staff. Close collaboration with EUROCONTROL, EASA, EU Commission.

→ CONOPS sneak preview



- ✓ All CONOPS Information in this presentation is **provisional**
- ✓ First need alignment and **endorsements in TaskForce**
- ✓ Document under review now

→ Structure of the CONOPS document

| Part 1 – CONOPS + Guidance Material | Part 2 – Annexes Reference Material |
|--|---|
| <ul style="list-style-type: none"> ▪ Objectives | <ul style="list-style-type: none"> ▪ Regulations |
| <ul style="list-style-type: none"> ▪ Scope | <ul style="list-style-type: none"> ▪ System Components |
| <ul style="list-style-type: none"> ▪ Roles & Responsibilities | <ul style="list-style-type: none"> ▪ Operational Characteristics |
| <ul style="list-style-type: none"> ▪ Airport Environment | <ul style="list-style-type: none"> ▪ Approval Process |
| <ul style="list-style-type: none"> ▪ Operational Concept | <ul style="list-style-type: none"> ▪ Risk Assessment |
| <ul style="list-style-type: none"> ▪ Safety & Security | <ul style="list-style-type: none"> ▪ Workflow, Operational Checklist |
| <ul style="list-style-type: none"> ▪ Coordination & Communication | <ul style="list-style-type: none"> ▪ Use Cases |
| | <ul style="list-style-type: none"> ▪ Glossary & Abbrevs |
| | <ul style="list-style-type: none"> ▪ Reference material |

Document is a combination of a CONOPS and Guidance Material and includes recommendations for airport operators and regulators

Roles & Responsibilities

The following **main actors** have been identified:

- a. Applicant
- b. Operator
- c. Regulatory Authority(ies)
- d. Pilot-in-Command
- e. UAS Manufacturer
- f. Component Manufacturer
- g. Competent Authority
- h. Airport Operator
- i. Air Navigation Service Provider (ANSP)
- j. UTM / U-Space Service Provider
- k. Citizen(s)

The above listing may not be complete but provides a general idea what actors might typically be involved.

The document describes their **typical roles and responsibilities**

→ Airport Environment

- Dimensions & Other Characteristics
 - > Aerodrome Traffic Zone (ATZ)
 - > UAS Geographical Zone ▶ horizontal & vertical dimensions

- Prerequisites

| PREREQUISITES |
|---|
| ▪ Operator/drone pilot(s) known and registered |
| ▪ Operator/drone pilot(s) licenced and trained |
| ▪ Approved equipment (meeting EASA specifications) |
| ▪ Confirmation to adherence to all applicable EASA and national/local regulatory requirements |
| ▪ Equipment meeting conspicuity requirements |
| ▪ Appropriate third party liability insurance arranged for commercial operators |
| ▪ Operations Manual available and maintained |
| ▪ Drone pilots must give priority to all (manned) aircraft and stay well clear of their flight path |
| ▪ Drones must be flown at a safe distance from people and buildings |
| ▪ Detailed Scenario / Flightplan |
| ▪ VLOS, daylight only |
| ▪ Safety assessment for the specified operation (SORA methodology) |
| ▪ Airport manager (written) permission |
| ▪ Civil Aviation Authority permission |
| ▪ Coordination and communication protocol with ATC (Approach, TWR) and airport operator |
| ▪ Go/No-Go decision protocol arranged |

Operational Concept

- U-space (introduction)
- Facilitation

Three models of drone facilitation are considered in the CONOPS. These are:

1. Segregated Operations

Non-critical specialized operations (do not include overflight)

2. Coordinated Operations




Interaction with ATC required, drone buffers, individual assessments

3. Integrated Operations

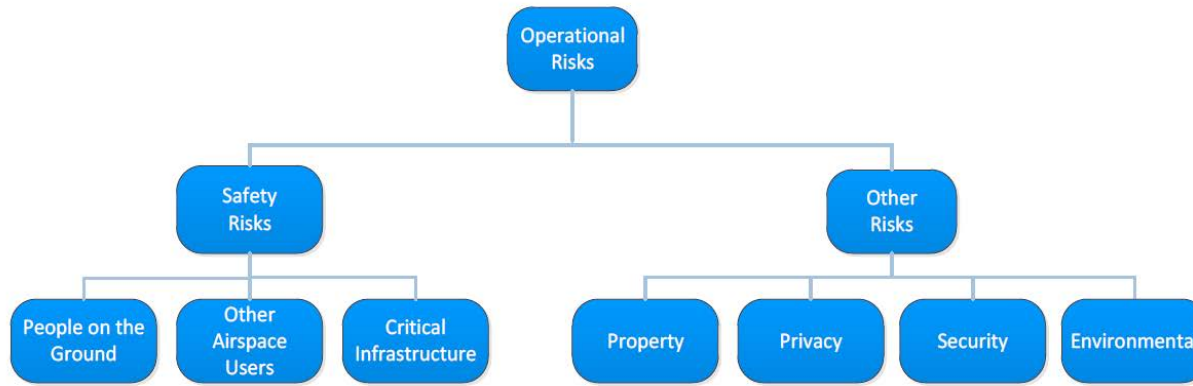
not elaborated in detail (only conceptual level) – too early

- Drone Fly Zones (DFZ) : see next slide for sample

→ Drone Fly Zones (DFZ)

| No Fly Zone Red Zone | Apply to Fly Zone Orange Zone | Advise and Fly Zone Green Zone |
|---|---|---|
|  |  |  |
| <p>An area of operation where drone operations are not compatible with other airspace users.</p> <p>ATC must perform an assessment to determine if the operation can be facilitated.</p> <p>The assessment is complex and approval is not likely.</p> <p>If approval is given, it will carry significant conditions or restrictions.</p> | <p>An area of operation where drone operations may be compatible with other airspace users.</p> <p>ATC must perform an assessment to determine if the operation can be facilitated.</p> <p>While approval is likely, it might carry some conditions or restrictions.</p> | <p>An operational area where drone operations are compatible with other airspace users.</p> <p>ATC is advised by a drone operator prior to and following an operation but explicit ATC approval may not be required.</p> |

→ Safety & Security



UAS Risk Considerations (JARUS)

- Safety Considerations
- Security Considerations
- Safety Management
- Security Management
- Incident Reporting
- Training

→ Security Considerations

- General description
- Responsibility for State Security
- Drone Threat Levels
- Threat Analysis
- C-UAS



→ Coordination & Communication

- Initial (Registration)
- Preparation (Operational Scenario)
- Pre-tactical (Approval Request)
- Tactical (D-0; Day of Operations)
- Post Ops



For the Day of Operations (D-0) it is of utmost importance to make sound Coordination and Communication arrangements for:

- Normal Operations (for a particular established use case), and
- Contingency Operations.

→ Annexes

| | Part 2 – Annexes Reference Material |
|--|--|
| | ▪ Regulations |
| | ▪ System Components |
| | ▪ Operational Characteristics |
| | ▪ Approval Process |
| | ▪ Risk Assessment |
| | ▪ Workflow, Operational Checklist |
| | ▪ Use Cases |
| | ▪ Glossary & Abbrevs |
| | ▪ Reference material |

→ Approval Process

- Approval Considerations :
 - > Operator Licence
 - > Approved Equipment
 - > Operations Manual
 - > Detailed Scenario, Flight Plan
 - > Communication Protocol
 - > Risk Assessment
 - > Airport Operator permission
 - > ATC permission
 - > Flight evaluation



➔ Risk Assessment (SORA)

- SORA focuses on assigning to a UAS-operation two classes of risk :
 - > a Ground Risk Class (GRC) and
 - > an Air Risk Class (ARC).

- Robustness

- Risk and Harm

- Safety Objectives

- SORA process

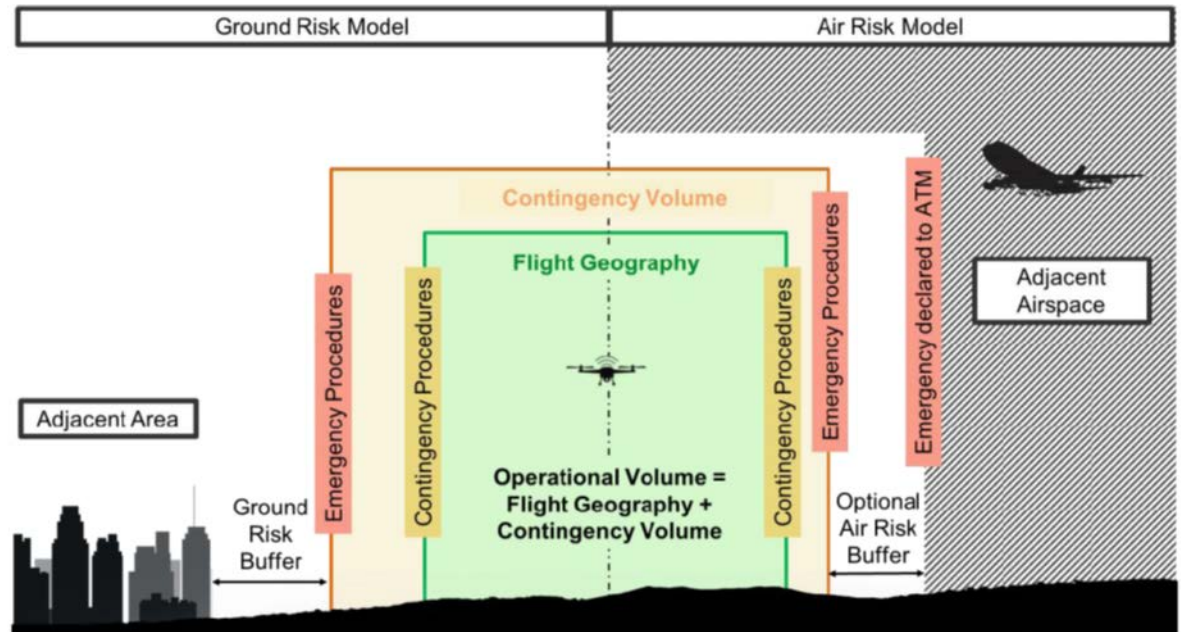


Figure 2 – Graphical Representation of SORA Semantic Model

Use Cases *

- Inspections Airside
 - > Flight Aids Inspections - ILS, Papi, Runway Lights, ...
 - > Runway/Taxiway Inspections
 - > Airside - outside runway strip
 - > Aircraft - on stand
 - > Surveying of buildings, runway systems and construction sites

- Inspections Landside
 - > Airport Perimeter
 - > Landside - Buildings, parkings

- Wild Life Management

- Emergency Management

- Photo & Video

*** The Use Cases will not be elaborated (only named) in the first publication of the CONOPS document, but targeted for the 2nd version.**



→ CONOPS - status

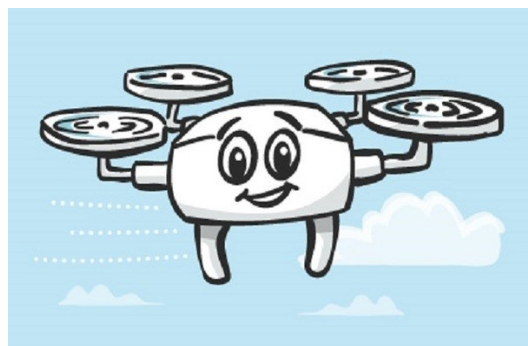


- ✓ First need alignment and **endorsements in TaskForce**. Document under review now
- ✓ Aim to have Taskforce alignment & agreement Q4-2019
- ✓ Aim to publish first draft version soonest afterwards (Q1-2020 ?)
 - inform ACI member airports
 - give clear recommendations to regulators (EASA, CAA's,...)
- ✓ Use Cases will be elaborated in 2nd edition, including validation (using the expertise of EUROCONTROL)

All CONOPS Information in this presentation is **provisional**



→ Q & A





THANK YOU

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