

Aero-Thermo-Mechanics

Université Libre de Bruxelles



UAV THREAT DEFINITION AND A FEW POSSIBLE SCENARIO'S

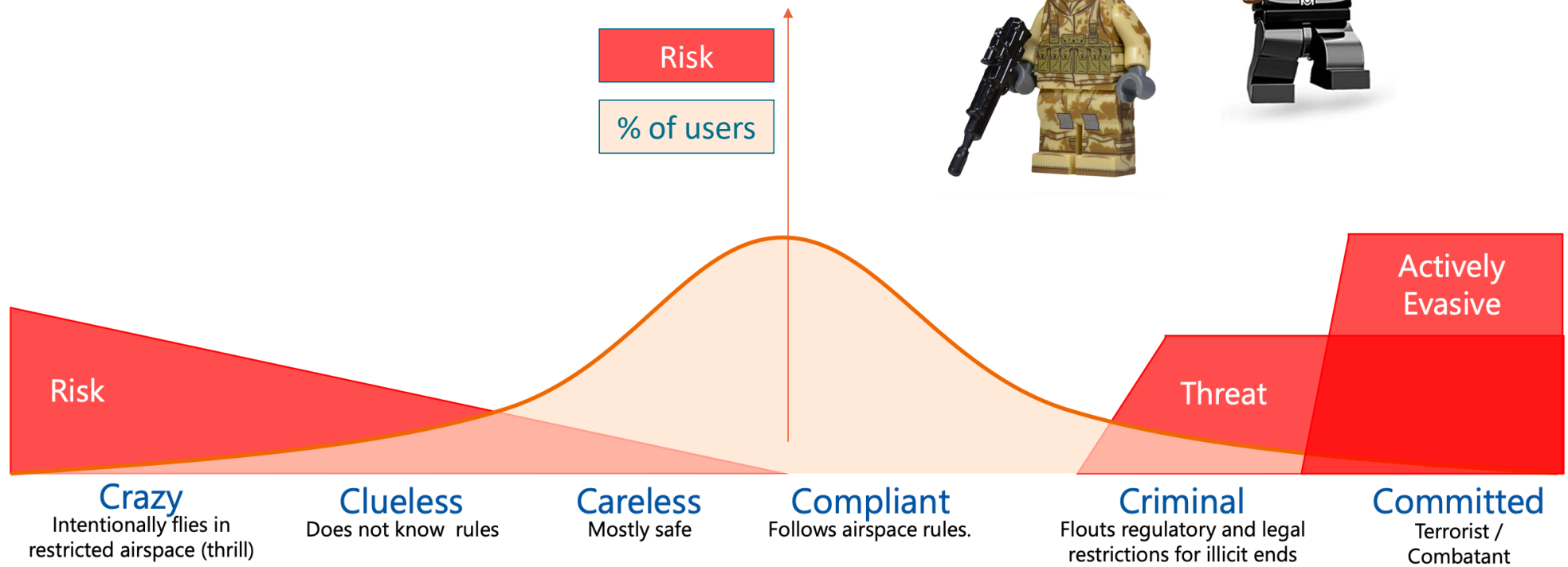
Patrick Hendrick



All UAVs can become a threat ...

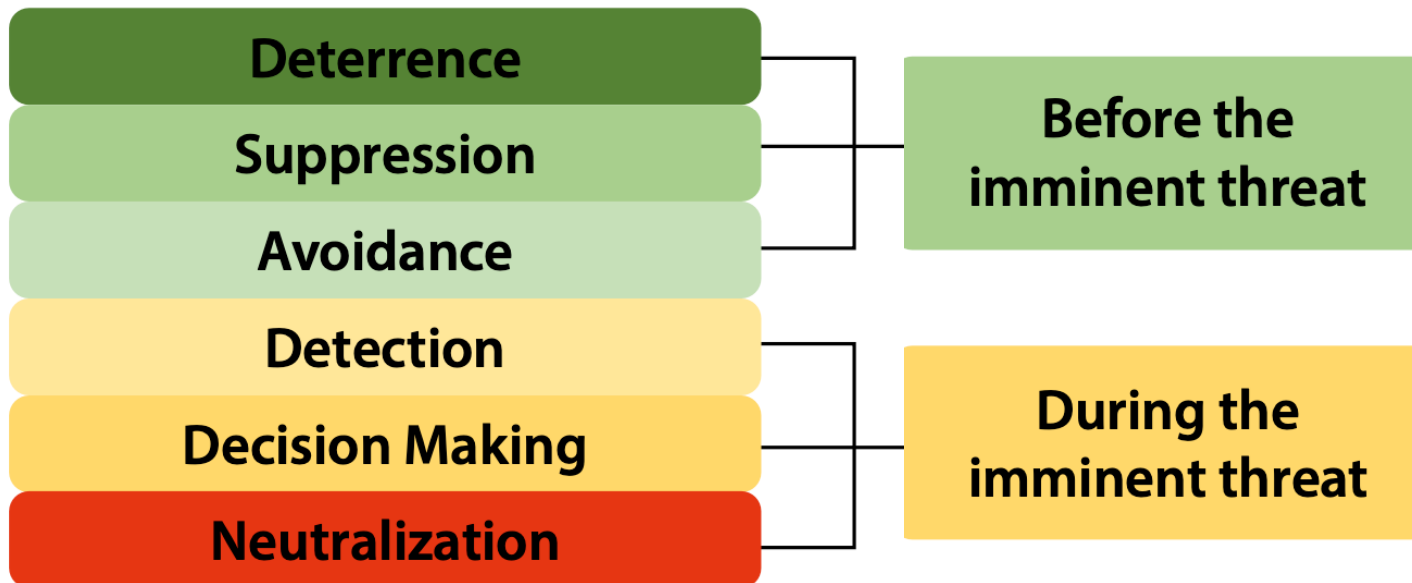
Multi-copters		• Examples: DJI Phantom, Yuneec Typhoon, Parrot Bebop • Vertical take-off and landing, hovering ability • Shorter flight distances compared to fixed wing • Easy to fly
Fixed Wing		• Examples: Parrot Disco, Skywalker X8, E-flite Opterra • Longer range, higher speed • Cannot hover, harder to fly compared to multi-copter

Problems



Courtesy A. Papy

Solutions



How to mitigate the threat ?

POSSIBLE SCENARIO'S ...



POSSIBLE SCENARIO'S ...

FROM AIRPORT SAFETY TO AIRPORT SECURITY

Olivier Nicolay

Skeyes – 25 June 2021

Hybrid Nature of Drone Incidents

- A drone incident can combine aviation **safety** and **security** aspects



The intentions behind a drone incident are not known.

Clueless or Careless individuals ?

Activists or Protesters ?

Criminals or Terrorists or ... ?

Objectives ?

Unauthorised UAV ?

- A drone is referred to as “unauthorised” when:
 - It is being **operated in violation of the applicable rules and regulations** applicable for the type of UAS operations.

And / Or

- When a drone is **operated outside of a permitted UAS geographic zones or outside the parameters of its authorisation.**

Unauthorized ? The risk

Any drone activity in the aerodrome environment without authority or permission could result in **safety/security risk and/ or have a **negative impact on business continuity and/or reputation**.**

(ACI EUROPE)

TIMELINE OF A DRONE INCIDENT IN **AIRPORTS**: 3 main phases



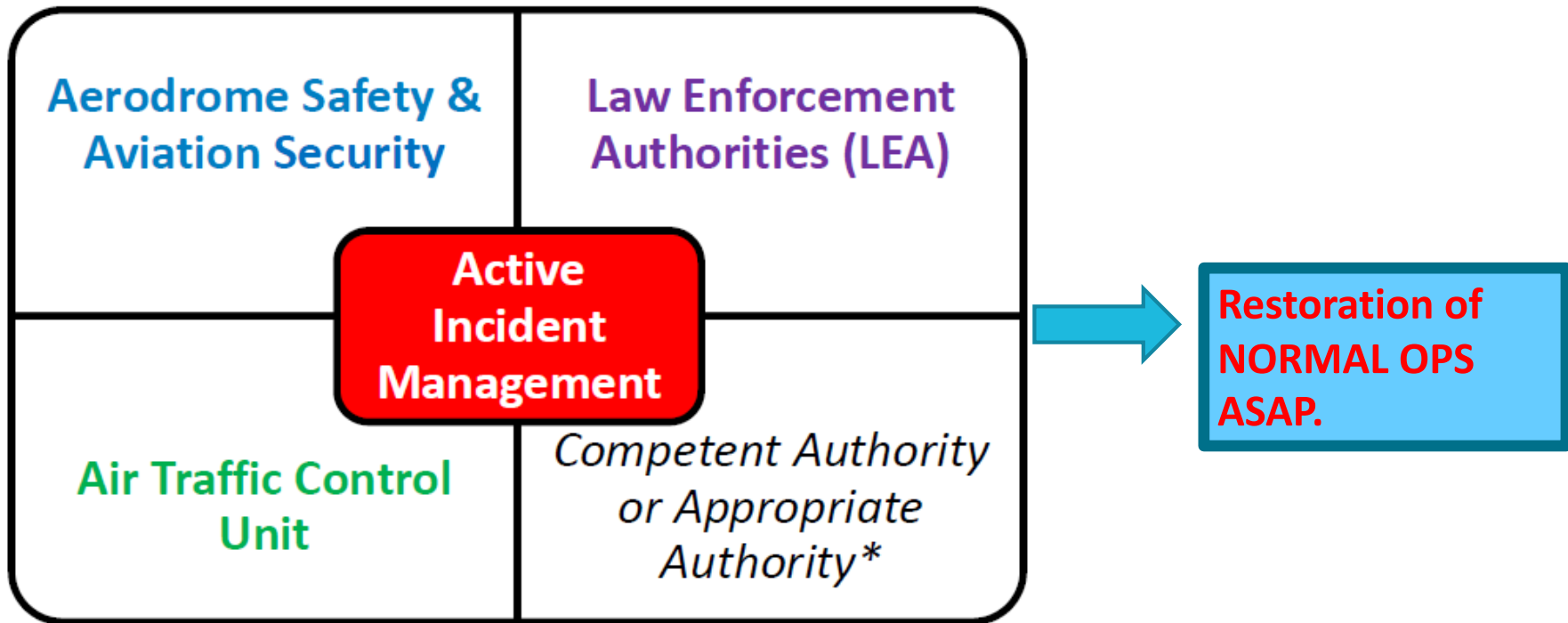
Before the incident

- Regulatory Framework Implementation
- Allocation of Roles and Responsibilities
- Instructions to ATC units (rogue drone procedure in place since 2019)
- UAS Geographical
- Application of Safety Management Principles to the Hazard
- Establishment of a Drone Incident Management Cell (DIMC).



EACH AERODROME IS UNIQUE and calls for SPECIFIC LOCAL C-UAS MEASURES.

During the Incident



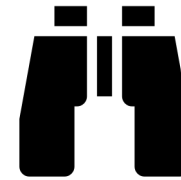
Post incident

- Evidence taking
- Investigation (leading to prosecution?)
- Safety and Security Analysis
- Continuous Safety and Security Improvements



Counter UAS solution

- 1. Detection
- 2. Tracking
- 3. Classification and identification
- 4. Neutralisation



Why is C-UAV so important ?

- The **GATWICK** drone incident (December 2018):

33 hours of disruption , 140,000 passengers affected, 1,000 flights diverted/cancelled, Cost = 64 M €

- The **MADRID BARAJAS** drone incident (February 2020):

Airport affected for almost 2 hours, 26 flights diverted, Airport re-opening just in time for an emergency landing

- And... **MULTIPLE SIGHTINGS AND INCIDENTS** reported all over Europe

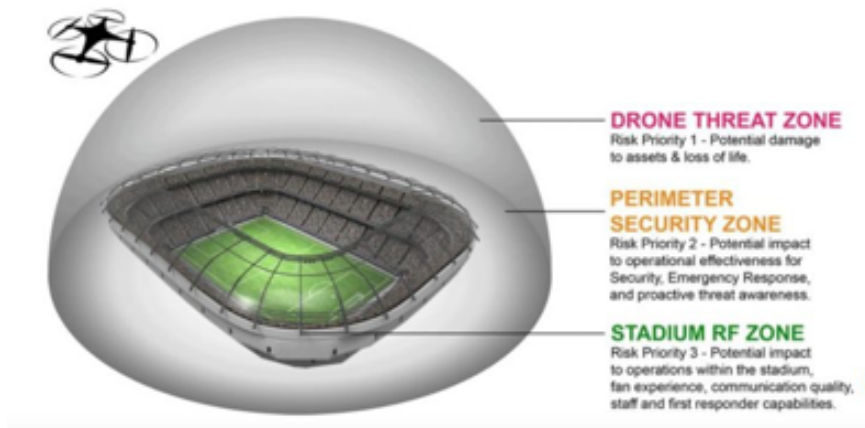
Such incidents could have a knock-on effect on the drone industry itself ...

Many other scenario's ...



France to spend \$14 million against drones transporting contraband into prisons

Feb 24 2022 - 4:38 am



Safety First: Protecting Your Venue From Unmanned Aerial Vehicles

‘A Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe’



5. Increasing counter-drone capabilities and system resilience

90. Drones are a highly innovative tool that can be used for legitimate but also malicious purposes, including organised criminal activities (e.g. smuggling of goods and migrants) as well as attacks on public spaces, individuals and critical infrastructure (including energy, transport and border facilities). While the EU has regulated the legitimate use of drones, there are no specific EU rules and guidelines on countering their unauthorised or even criminal use. The rapid pace of innovation and the increasingly easy access to commercial drones and their components means that the threat is likely to grow.
91. Protecting from malicious and non-cooperative drones also requires access to affordable and reliable counter-measure technologies. Some Member States are however still facing challenges with liberating the necessary budgets, adapting or creating the necessary regulatory framework and identifying the right (technical) solutions to be able to cope with the threat of non-cooperating drones. The proposed Directive⁶⁸ on the resilience of critical

Flagship action 17: The Commission intends to adopt a counter-drone (C-UAS) package

Flagship action 18: The Commission intends to adopt an amendment to the aviation security rules aiming to ensure that aviation authorities and airports increase their resilience when faced with the risks posed by drones⁷².

Questions ?

