Autonomy—a definitional Challenge in Drone Regulation

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Regulatory Definitions

- **Europe:**
  An operation during which an unmanned aircraft operates *without the remote pilot being able to intervene*.

- **Australia:**
  ‘An operation of an unmanned aircraft that does not allow pilot intervention in the management of the flight of the aircraft’ further explains,
  ‘one in which there is *no ability for the pilot to intervene* in the conduct of the flight’

- **United Kingdom:**
  The concept of an “autonomous” UAS is a system that will do everything for itself using high authority automated systems

  High authority automated systems – those systems that can evaluate data, select a course of action and implement that action without the need for human input. Good examples of these systems are flight control systems and engine control systems that are designed to control certain aspects of aircraft behaviour without input from the flight crew.
Deviation from Technical Understanding

- Operational Perspective
- Human Factor and Ergonomics literature
- Conception in other autonomous systems:
  - Self-driving Cars
  - Autonomous Weapon Systems
  - Autonomous Maritime Ships
Problem

- Objective
- Sets high threshold

Regulatory Definition

Technical understanding

- Spectral
- Focus on classification
Regulatory Implications

- Furtherance of Regulatory Lag
- Ineffective Safety Oversight
- Potential Disharmony with EU AI framework
- Implications for Drone Traffic
**PhD Project**

**REGULATION OF DRONE AUTONOMY: Implications for European Airspace**

**DRONES ARE SLOWLY POPULATING CIVILIAN AIRSPACE**

![Image of drones flying in the sky]

**WHAT THIS PROJECT IS NOT ABOUT...**
- Military or law enforcement use of drones
- Drone or surveillance implications of drones
- Preparing concrete taxonomy for drone autonomy

**DISCIPLINES UNDER FOCUS**
- Law
- Security Studies
- Science and Technology Studies (STS)

**STRUCTURE OF ARTICLES:**

**'Autonomy—A Definitional Challenge in Drone Regulation’**
- Discussion between regulatory definition of ‘autonomy’ and technical understanding of the concept.
- Focus on regulations in Europe, UK, Australia and US.

**‘Safety and Security Implications of Autonomous Drones’**
- What ‘safety’ and ‘security’ threats are posed by autonomous behavior of drones?
- Real-time accidents of autonomous systems and potential harms that drones with autonomy can cause.

**‘European Regulation of Drone Autonomy’**
- Analysis of European regulations from the perspective of drone autonomy
- Conflicts with other European frameworks

**‘Drones: Autonomy Framework for Safe European Airspace?’**
- Considering the findings of first two articles, this article will question if the current European approach towards autonomy is sufficient, and if not, in what ways?
- The author would also discuss possible regulatory frameworks to deal with the integration of autonomy for safe European airspace.

**MORE AUTONOMY WOULD BEAR FURTHER IMPACT ON SAFETY AND SECURITY CONSIDERING, AMONGST OTHER, FOLLOWING FACTORS:**
- Issues relating to Artificial Intelligence (AI)
- Experience with other autonomous technologies such as self-driving cars.
- Human-drone interaction issues as more autonomy is infused in drones.
Thank you