

64rd Meeting of the Civil GPS Service Interface Committee

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INTRODUCTIONS



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Background

- Prac-academic (EU/UK adviser: transport/policing)
- Areas – Road, Air (AMM) & Space
- Safety; Security (counter-terrorism)
- Policing (cross border/comparisons)
- Technology – (autonomous systems)

Finalist of the 2024 UN SDG Digital
GameChanger Award (Goal 16 & 17)

THE FUTURE OF TRANSPORT

*Sustainable and Connected Transport
.... the future (virtual and physical)*



"Mark my word...a combination airplane
and motorcar is coming."

- Henry Ford, 1940







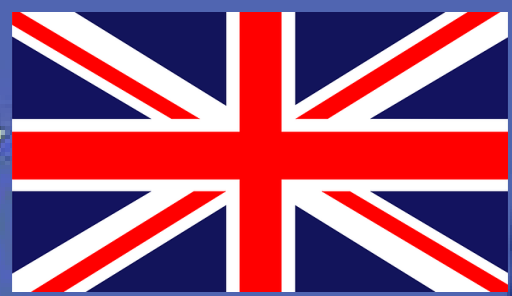
Policing – Autonomous systems
(CAV's/VTOL's/UAV's).....
Opportunities vs. Challenges



MERGING TECHNOLOGIES – (RISKS)
HOW TO RESPOND?



THE GOOD



THE BAD



ISSUES: CHALLENGES & RISKS (CAVs)

- **Lack of coordination (governance)** efficiency (sharing of knowledge internally and externally)
- **Policing technology!** Increase on police time/demands to policing/social acceptance
- Enforcement and prosecution
- Remote use (BVLOS) – *for good and bad.....* influence/impact of space.....
- Self-builds.... (and maintenance of UAV's)
- More accidents/collisions? (civilian and police)
- Swarms of drones (organised crime/criminal use/CAV's)
- Carrying dangerous cargo/risks to VTOL's
- Cross border movements (more capacity and capabilities)
- **Ultimately Stopping technology (UAV's/autonomous systems.....)**

Challenges



"One major underlying concern across industry sectors is the lack of tested and fully vetted drone detection and counter-drone systems"

The big issues on people's minds:

- How can we be proactive in detection?
- How do we keep pace with technology?
- What can we do?
- What other steps we can take to mitigate CAV events?
- What does the law say?
- What are the risks of actions taken or not taken....

Who has the right/responsibility to bring down a drone or stop a CAV?

..... LEGALITY ISSUES



Legal concerns and related challenges....

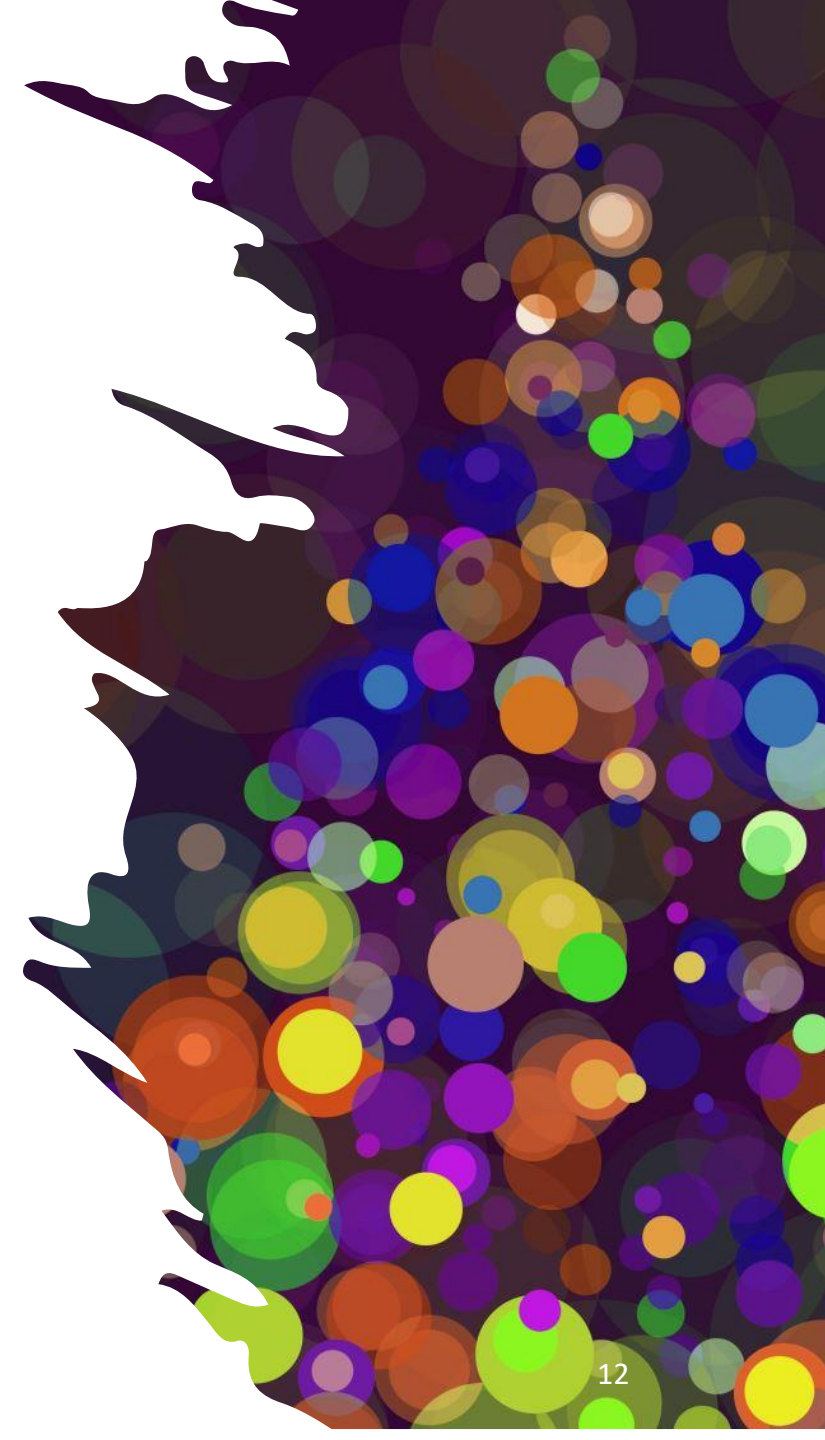
Not quite black and white!

- Changes to the air system/space (U-Space and UTM): **NASA**
- Definitions.....

Aircraft: "Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface."

"Unmanned aircraft systems (UAS) are a new component of the aviation system"

- Who owns the airspace..... (blurring of air and space)
- Damaging a CAV (what is a UAV: landscape set to change..... And complicate matters more.....)
- UAS/VTOL interference (from Space, jamming..... by the police!.....) risks..... (proportionality – *unintentional/intentional*)
- **Anti-jamming technology..... ITU**



ISSUES: CHALLENGES & RISKS

ITU: Issues warning on interference with radio navigation satellite services

GNSS spectrum protection and interference detection and mitigation - spectrum management; the mitigation of radio frequency interference - radionavigation satellite services (RNSS)

- ***Stopping CAVs (UAV/VTOL)***

“Protecting this ecosystem is essential for the safe and satisfactory operation of the growing number of devices, applications and autonomous vehicles that rely everyday on positioning and navigation systems on air, sea and land.” (ITU, 2022)



Space and International Law

The "Broadcasting Principles"

- The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting
General Assembly resolution 37/92 of 10 December 1982

*Harmful interference is defined in both No. **1.169** of the RR and in No. **1003** of the ITU Constitution, as “interference which endangers the functioning of a radionavigation service*

Special attention needs to be paid to safety services (aeronautical, maritime and radionavigation), that require absolute international protection (No. 15.1 RR)

ITU objective is to ensure interference-free operations of radiocommunication systems but puts much of the responsibility back to the respective nations.....

Jamming CAV's Necessity and Legalities

NATIONAL ACTS

Communications
Act of 1934 Section
333 of Title 47 of
the U.S. Code

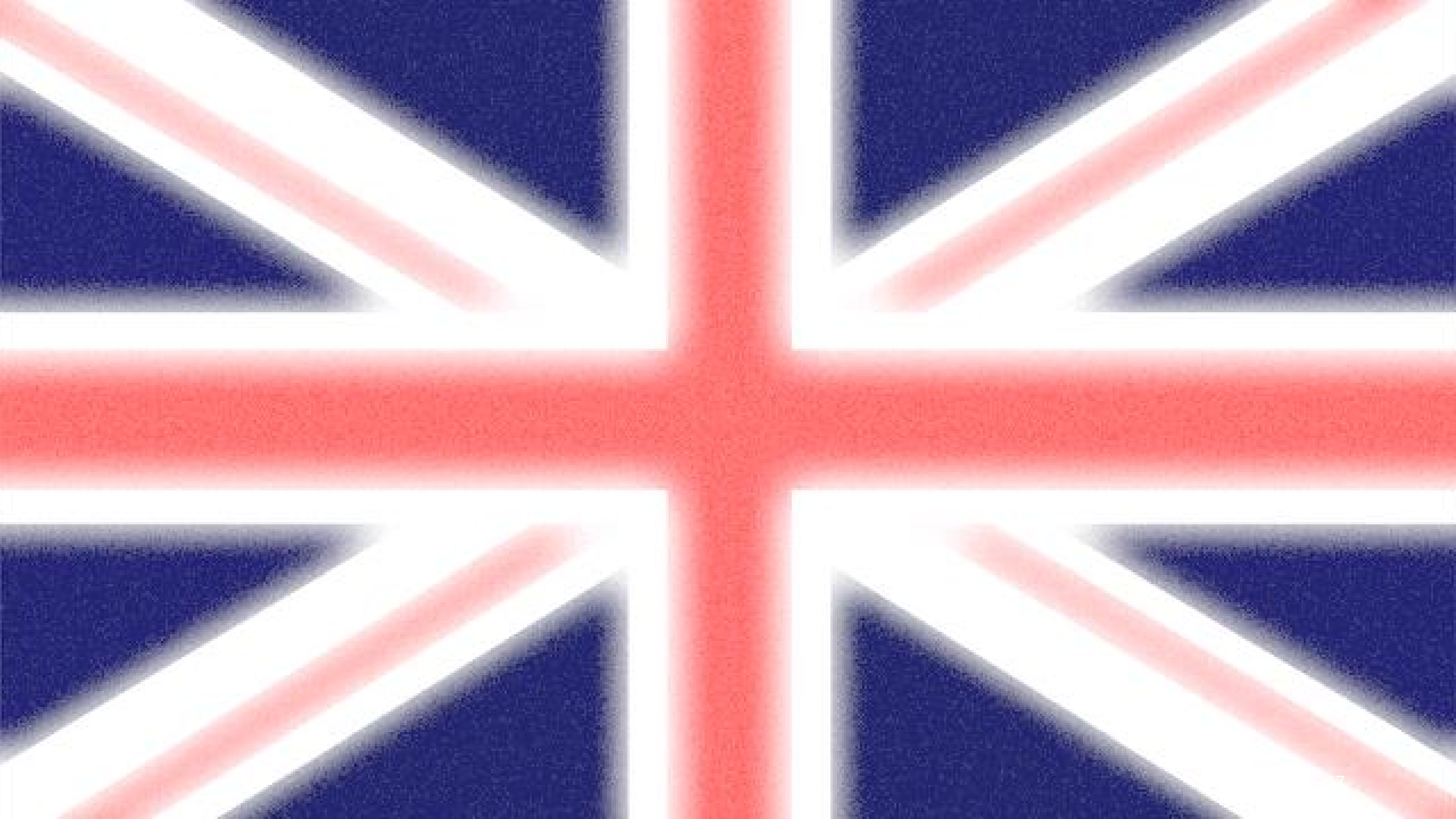
Section 68 of the
Wireless
Telegraphy Act
2006


**Civil Damages and
liabilities**

Criminal Codes

About 46,000 aircraft have logged GPS problems over Baltic Sea since August, says report





A person is seen from behind, operating a drone from a boat. The drone is flying in the air, and the boat's interior and equipment are visible. The scene is overlaid with a semi-transparent blue filter.

Thank you
Any questions?

Please do reach out and contact me

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