

United Nations International Meeting on the Applications of Global Navigation Satellite Systems

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UNOOSA



INTRODUCTIONS



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LOOKING UP



Thinking about the future....

RISKS

Opportunities and Challenges

GNSS and UAV's

The emergence of technology and systems: The blurring of boundaries in Space?





RECENT EVENTS: 2022





Technology - 2 sides....

SAFETY AND SECURITY



At the same time;

- Reports around drone use (Ukraine) and around airports are causing fliers (passengers) to become more fearful of their safety and security while on board an aircraft.....
- *Drones are increasing being considered a nuisance and risk compromising society's safety and security.....*



REASONS

Unintentional
ignorant/ill-informed
uneducated
clueless/careless

**Purposeful
Actions....
(intentional)**

financial; protests;
disputes

**Terrorist
attacks..... *Death
and destruction***



Legislation
Education

RISKS....

Distinguishing between unintentional and intentional

CURRENT TRENDS: global (challenges)

Drones are increasing becoming a '*nuisance*' for society

RISK at airports and to aircraft worldwide is identified as increasing:

- In 2017 it was reported that a drone hit a commercial airplane approaching Quebec City in Canada
- The incident at Gatwick in December, 2018 proved especially disruptive, impacting the flights of more than 100,000 passengers
- **2021 and 2022 near misses involving commercial planes, helicopters are intensifying**



Increased incidents at prisons and around schools:

(2022)

- Schools: Warning of increased use and advising teachers to contact the police
- Drugs, phones and weapons flown into prisons (global issue)

e.g. 3 Nov - A drone dropped a firearm at the medium-security Mission prison, British Columbia, Canada

27 Oct - Man arrested for attempted delivery of 48 grams of hashish into a Russian prison via a drone.....

- 23 Sept: Kuwait - Three drones attempting to drop contraband into the Sulaibiya Central Jail complex were discovered by security personnel

Increasing reports on borders and near CNI Security-terrorism events and threats.....

U.S. Congress told, July 2022 - 8000 illegal cross-border drone flights since August 2021

2022

-
- 3 November: An attempt by a Pakistani drone to cross the Indian border was met with 18 rounds of fire by the Indian Border Security Force
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- 11 November: The Indo-Pak border reported a surge in drone sightings, listing the dropping of drugs and weapons into India
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- 20 Oct: Swedish Royal Armed forces dealing with incident involving drone activity over military facility
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- 14 Oct: Norwegian police investigate drone sighting over the Kaarstoe gas plant
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- 4 Oct: Denmark - For the second time in a week: Drones spotted near North Sea gas fields according to Danish Police
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- 28 Sept: U.S. - White House Partially Evacuated After Drone Enters Restricted Area
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"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 drone events?
- What does the law say?
- What are the risks of actions taken or not taken....

Who has the right/responsibility to bring down the drone?

..... 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 UAV (what is a UAV: landscape set to change..... And complicate matters more.....)
- Drone 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 drones/UAV's.....***

“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

ITU objective is to ensure interference-free operations of radiocommunication systems

Between 1 February 2021 and 31 January 2022 ITU received 329 reports of harmful interference or infringements of the Radio Regulation

Jamming Drones 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**



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