

## Drones security: why does it matter and what actions can be taken.

Workshop on UAV integration in Air traffic



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Nivelle

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## UAV Use cases

How are UAVs penetrating our lives



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## UAV use cases

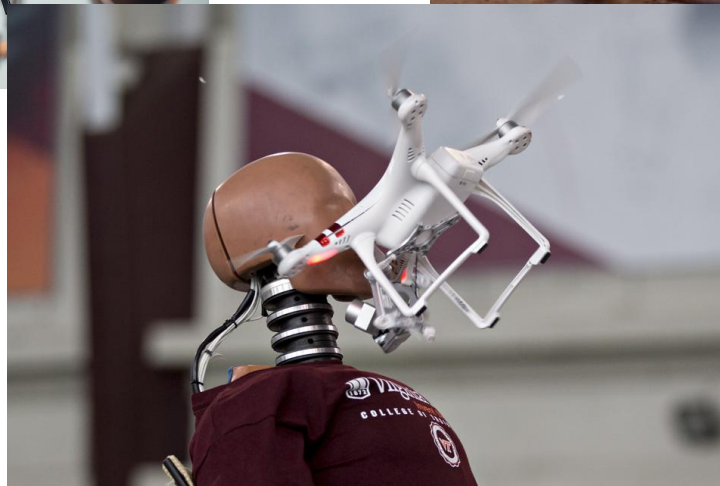
How are UAVs penetrating our lives



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## UAV safety

What if

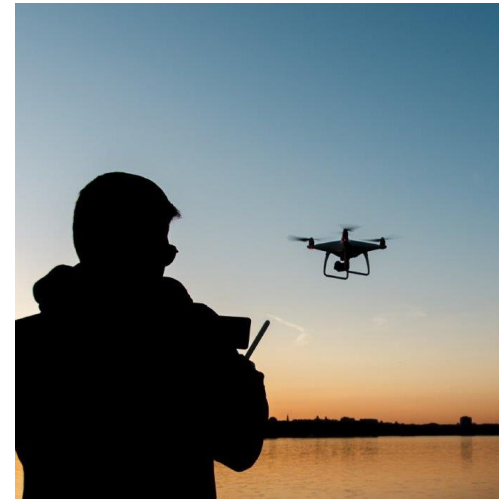




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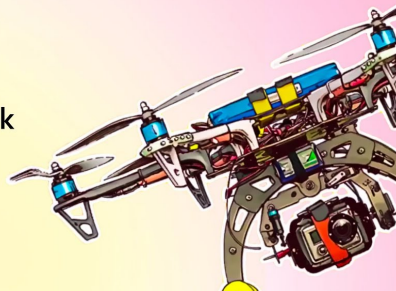
## Causes

What are the main triggers to drones accidents



**Fun**

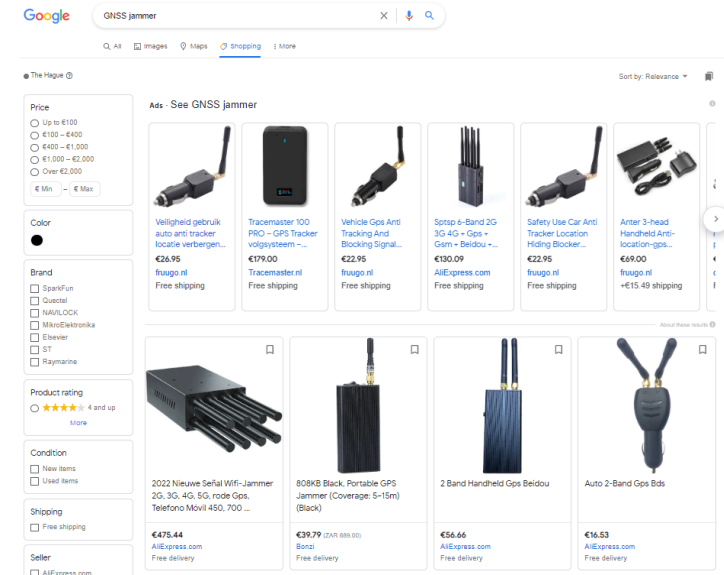
How to hijack  
a drone



# Countermeasures

## Source of the problem

- No recognised standards for minimum cybersecurity
  - What are the most relevant threats?
  - How should the drone/operator react during a threat?
  - What are the required technologies?
- Therefore, no standardisation and certification mechanism
- The result:
  - Malicious C-UAV can be now implemented by anyone with a small budget and no expert skills.
  - A jammed UAV can be dangerous for goods, people and infrastructure
  - Malicious signals can easily hijack a drone for different purposes
    - Mission deviation
    - Damage to goods, people or infrastructure
    - Stealing data
- UAV integration in Air traffic requires manufacturers, operators, and institutions to solve this issues



### JAMMER - How is made a GPS GSM DCS Jammer

YouTube · Electronics Projects Stefano91ste  
19 Apr 2020



### How to make Wifi Jammer

YouTube · Tech Maker  
3 Aug 2017



# Telespazio effort - CyTEF

## Towards a qualification and certification facility

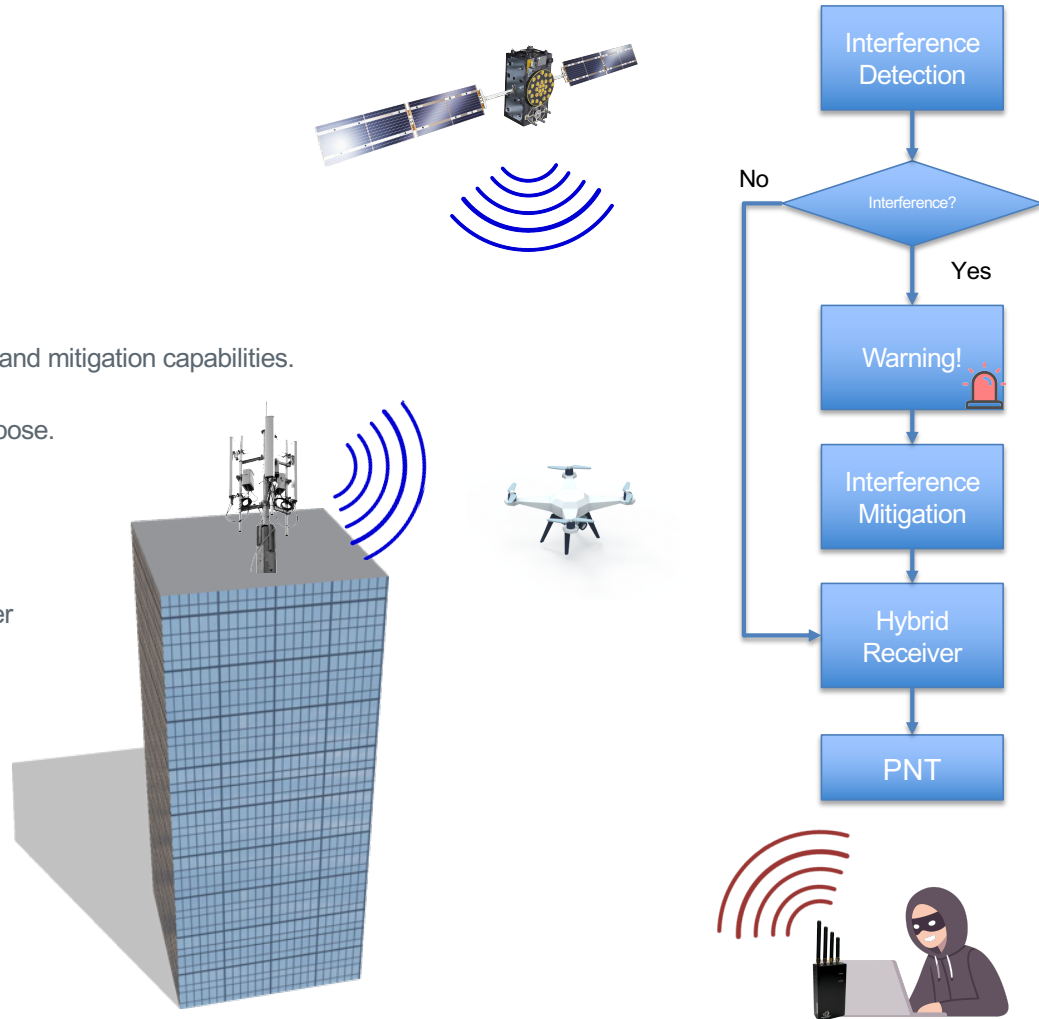
- **Cybersecurity Test and Evaluation Facility**
- Purpose: prototyping a facility for testing the resilience of drones to security attacks on:
  - C2/C3
  - GNSS
  - IT
- Mission: to create a reference centre for future certification of drones resilience characteristics
- Role of TPZ-BE
  - Technical coordinator
  - Overall system design responsible
  - Development of the C2/C3 attack generator
- Consortium of Belgian companies (Rhea, M3Systems, AiRobot, Unify)
- Project demonstrated at DronePort in St Truiden
- Follow-up of an operational facility under preparation



# Telespazio effort – NAV-SSHE

## Secure navigation in hostile environments

- NAV-SSHE: Navigation Sensors Switching in Hostile Environments
- Project funded by ESA.
- Combines a hybrid 5G/GNSS navigation with interference detection and mitigation capabilities.
- Use cases don't include drones yet, however very well fit for the purpose.
  - Navigation of drones in urban environment
  - Benefit from hybrid navigation
  - Improved security for safety of life
- Telespazio Belgium Prime, M3Systems partner for the hybrid receiver
- Proximus participates as in-kind contribution.

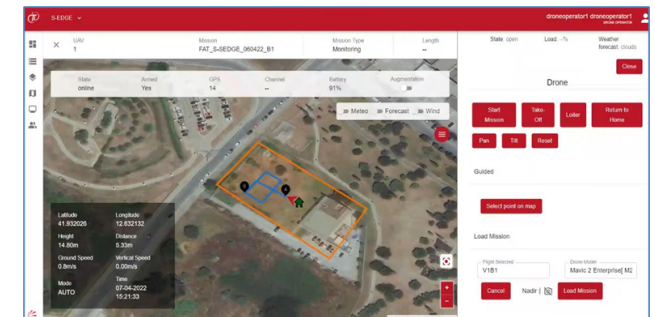
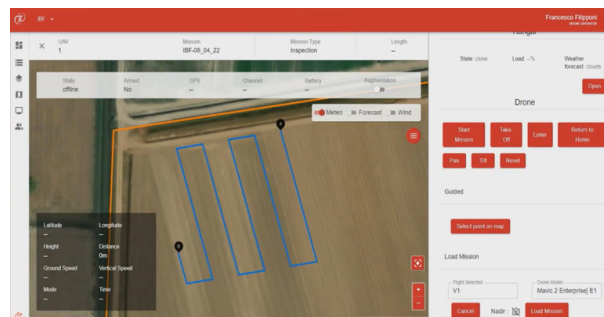




# Telespazio Effort – T-Dromes

## The Telespazio solution for RPAS Fleet and Mission Management

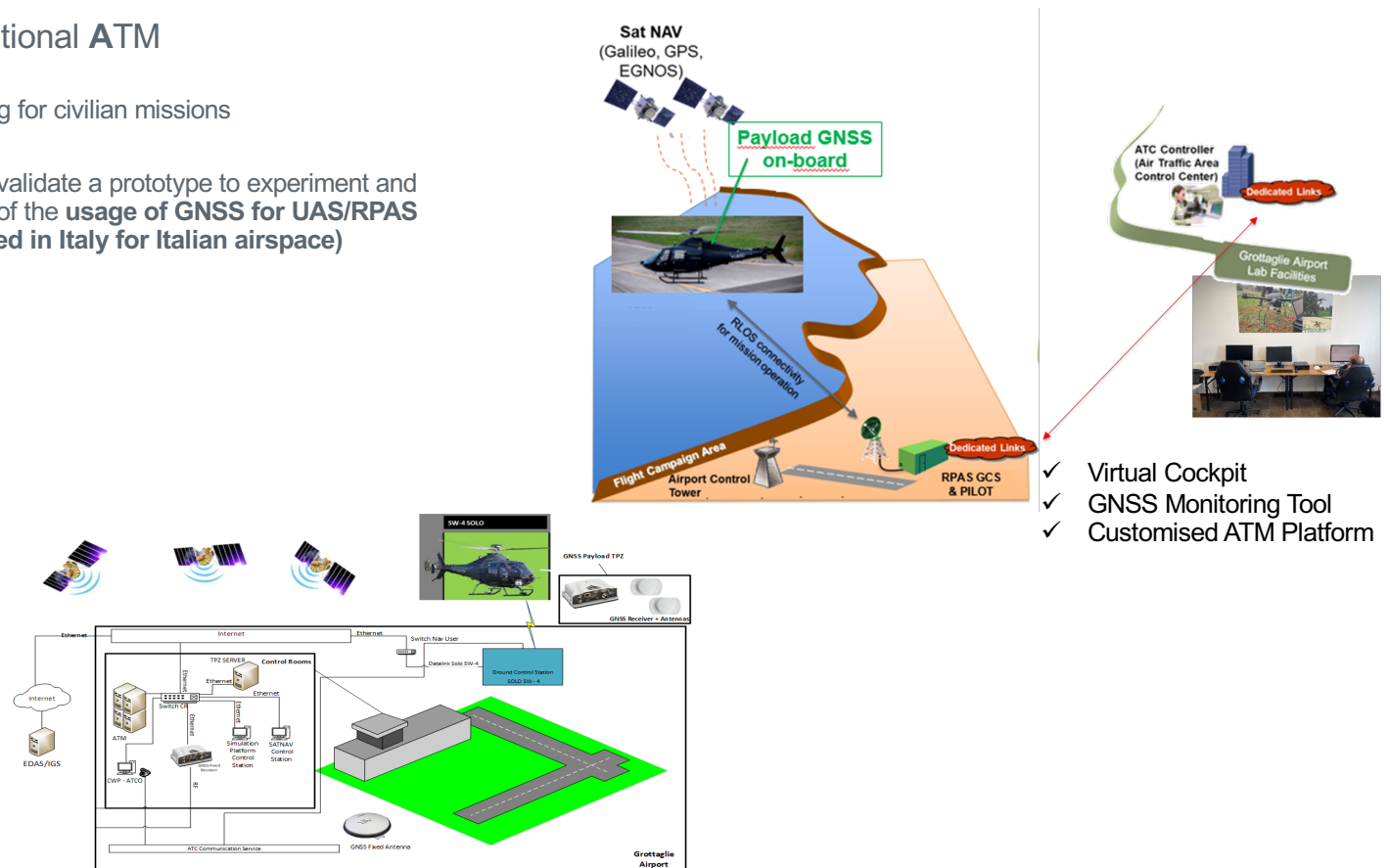
- RPAS fleet and mission management solution, which allows to scale-up the use of drones in complex operations
  - **a digital platform** that supports all the phases of the value chain related to drone applications
    - federation of drone operators
    - mission design
    - Authorization support
    - Mission planning and mission management
  - **Procedures and operations** to manage the overall workflow related to the drone mission;
  - **SW tools and HW payloads** to federate and interface drones owned by the End User and external drone operators.
  - **interface with the local UTMU-SPACE Service Provider** for aeronautical airspace restrictions and the flight authorisation process.
  - Integration of **User Application**
- Allows the **control multiple drones**, also remotely during VLOS and BVLOS



# Telespazio Effort – Integration of UTM in ATM, the experience of URANO

## UAS/RPAS Integrated into the National ATM

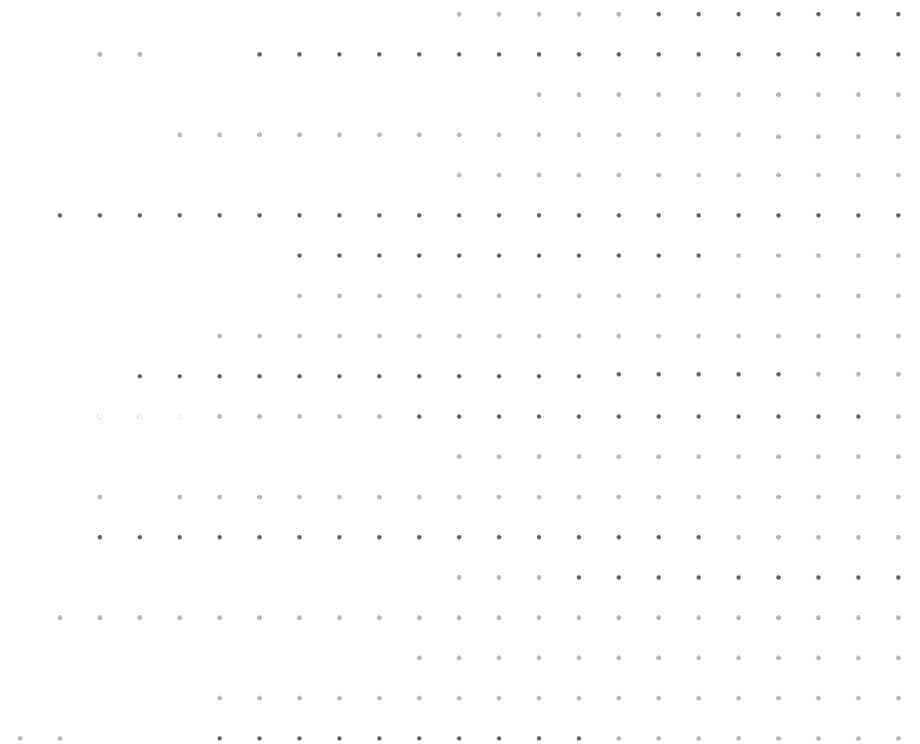
- **Context:** UAS/RPAS with MTOW>150 Kg for civilian missions
- **Objectives:** Design, develop, verify and validate a prototype to experiment and demonstrate the benefits and limitations of the **usage of GNSS for UAS/RPAS integrated into national ATM** (developed in Italy for Italian airspace)
- **Functionalities**
  - C2 Tactical Monitoring
  - GNSS Strategic Monitoring
  - GNSS Tactical Monitoring
  - GNSS RF Events Detection
  - Multipath Analyzer
  - GNSS Performances Analyzer
  - Virtual cockpit
  - ADSB Extender





THANK YOU  
FOR YOUR ATTENTION

[telespazio.com](http://telespazio.com)



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