

## *DroneRadar the UTM Solution*

## *Invitation to the Eastern European UTM Group*

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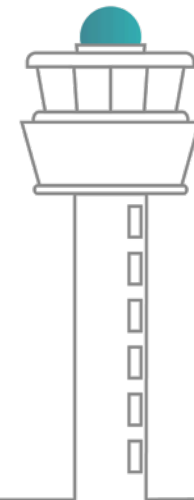
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POLISH AIR NAVIGATION SERVICES AGENCY



# Agenda

- DroneRadar project history
- Conclusions from UTM vs Manned aviation challenges
- Mobile App (why education is so important)
- ANSP Perspective
- Example of 2way Non Verbal Communication Dynamic Airspace management
- DEMO
- Roadmap to UTM Croatia (proposal)
- What next?
- Who we are?

# The DroneRadar project history



- Country wide promotion
- Internet
- Social media
- Billboards

- New CAA regulations
- Weight categories
- Flight definitions

- EU Warsaw Declaration

- DroneRadar integration with Military Airspace Management Unit (PL) and PANSA (Polish Air Navigation Services) 4 TWR and 2 FIS Regions

- Establishing cooperation with HEMS
- Dynamic Airspace management implementation

- Beginning of test phase for engaging the Drone Pilots by Police and SAR
- The U-Space national support program (Żwirko i Wigura) is launched

- DroneRadar award "European Drone Hero (Brussels)"

- "Geofencing"
- AaaS
- End-to-end UAV flight management
- ADS-B (in, out) with Aerobits
- UTM Interconnects
- Integration with Drone Detection and elimination systems



33 000+  
downloaded  
applications

New tech, trackers, ADS-B, LTE, Bluetooth .... ?

With full responsibility **NOT TODAY!**

Who will certify those?

# (TECHNICAL aspect) UTM vs Manned aviation challenges



Localization	VOR, ADF, DME, ILS, PBN* +GPS	GPS
Altitude	Barometric sensor	GPS (w/o guarantee)
Visibility	Radar, transponder A, C, S, ADS-B	Trials with LTE + ADS-B
Restriction information's	AIP, NOTAM, AUP	+ Geofencing
ATS – Pilot communication	Radio VHF, CPDLC**	2 way non-verbal communication **

\* Newest systems

\*\* VHF cannot be used by Drone pilots (antenna height, permission to use the aircraft radio systems, etc...)

So, what today?

Procedural kind control,  
While performing POCs on new technologies like  
e-identification, ADS-B, Barometric BVLOS flights

# The DroneRadar ecosystem



## Mobile App iOS, Android



- 3 lights, advice about possibility of the flight at given place and time
- User, without any aviation knowledge become familiar with all necessary aeronautical knowledge and regulations
- App allow flight registration (Check-In)
- DroneRadar is a frontend to all UTM Services, like Drone Registration DB, Geofencing, education, and many others...
- Basic App (always) Free of Charge
- what3word integration

## ANSP



- Secure, web based console, with set of predefined user rights, tailored to ATS needs (TWR, FIS, AFIS)
- Console allow 2way “non-verbal communication” between ATS and RPAS (operator) with the use of a notification of requests for flights, start/end times, loss of control and emergency situations

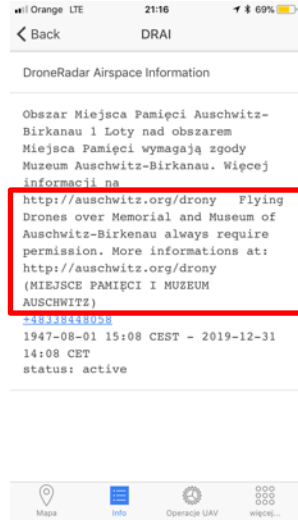
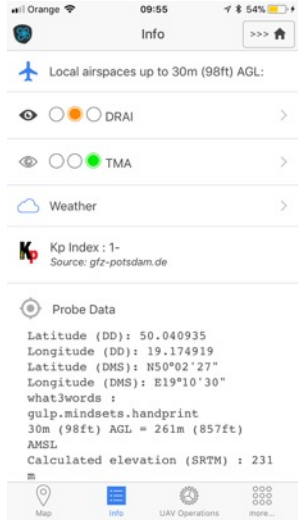
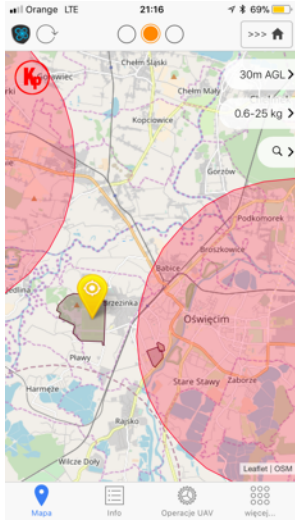


## Backend & Interfaces



- AaaS (Airspace as a Service)
- Drone Registration
- E-Identification
- Operations (e.g. HEMS integration)
- Active Geofencing
- Other ANSP for Drone tourist activities

# Effective way to communicate with Drone society



Change DroneRadar Airspace Information

Name:

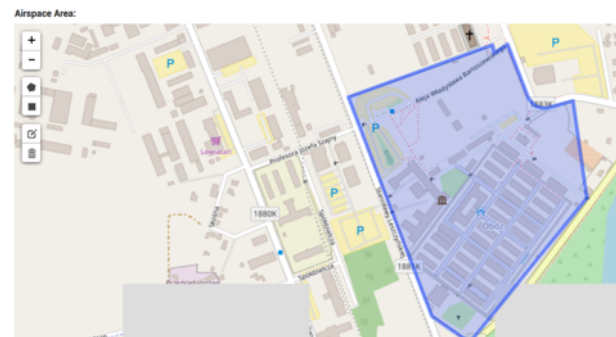
Phone:

Registry:

Started: Date:  Today  
Time:  Now

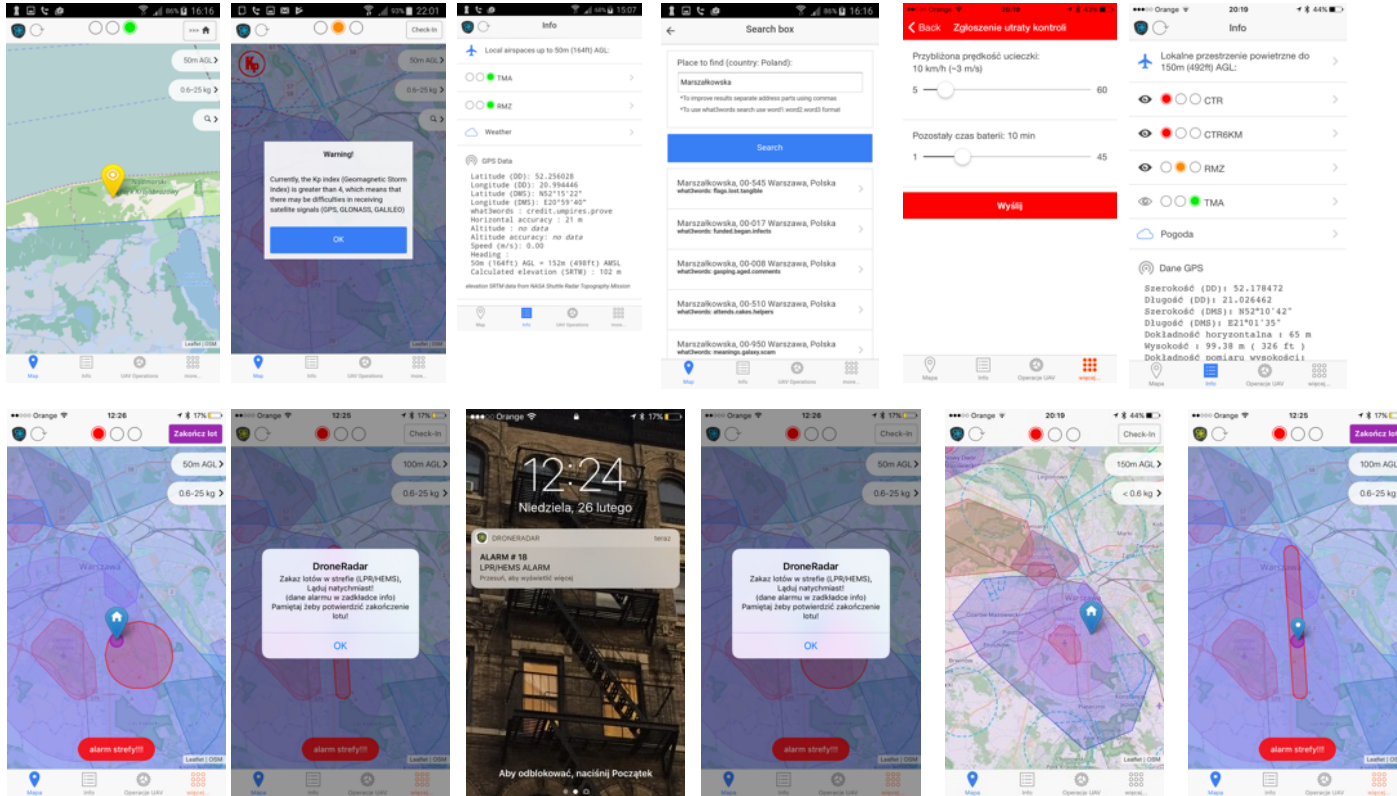
Until: Date:  Today  
Time:  Now

Note:





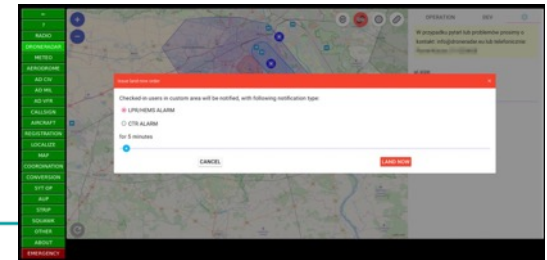
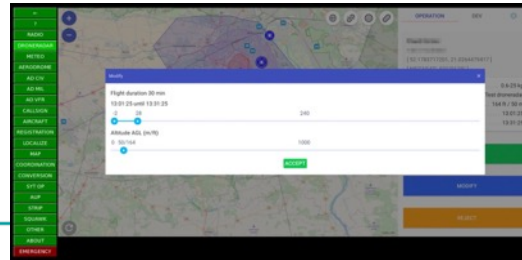
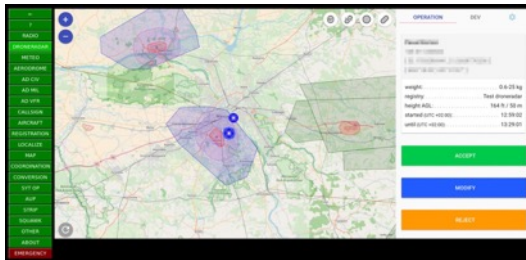
# DroneRadar app (Multilanguage support)



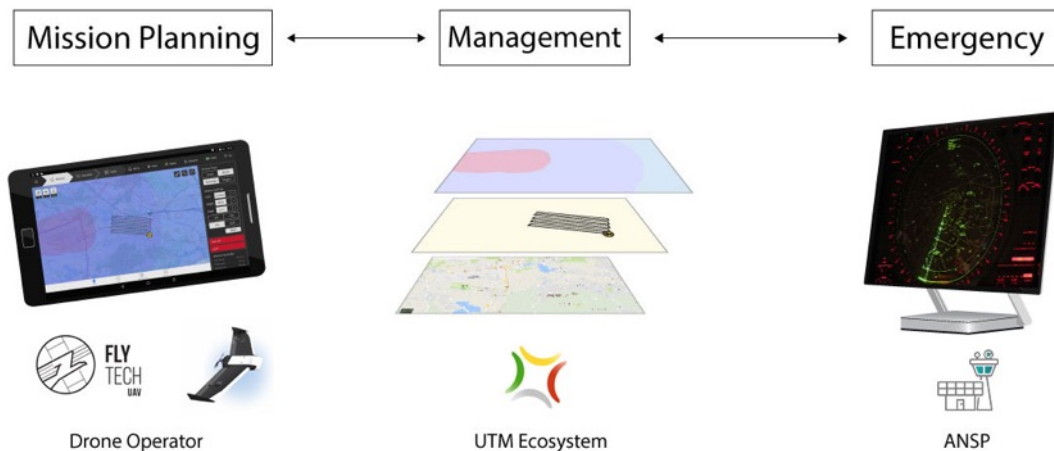
# ANSP perspective

# What traffic controllers says about DroneRadar

- Two Way non-verbal communication is extremely useful, however requires changes in the law and ANSP operational procedures
- Extremely user friendly interface
- Use of DroneRadar, facilitates communication between ATS and UAV operator
- ATS noticed educational character of DroneRadar and increasing awareness even among amateur UAV operators
- By one click ATS can send request to land in certain area (CTR or self defined)
- DroneRadar is a powerful solution with multilevel user privileges mapped into different roles (FIS, TWR, Military, SAR)
- Intuitive use
- DroneRadar significantly reduce communication time and errors between ATS and UAV operator (to absolute minimum)



# UTM end-to-end, two-way non-verbal communication platform



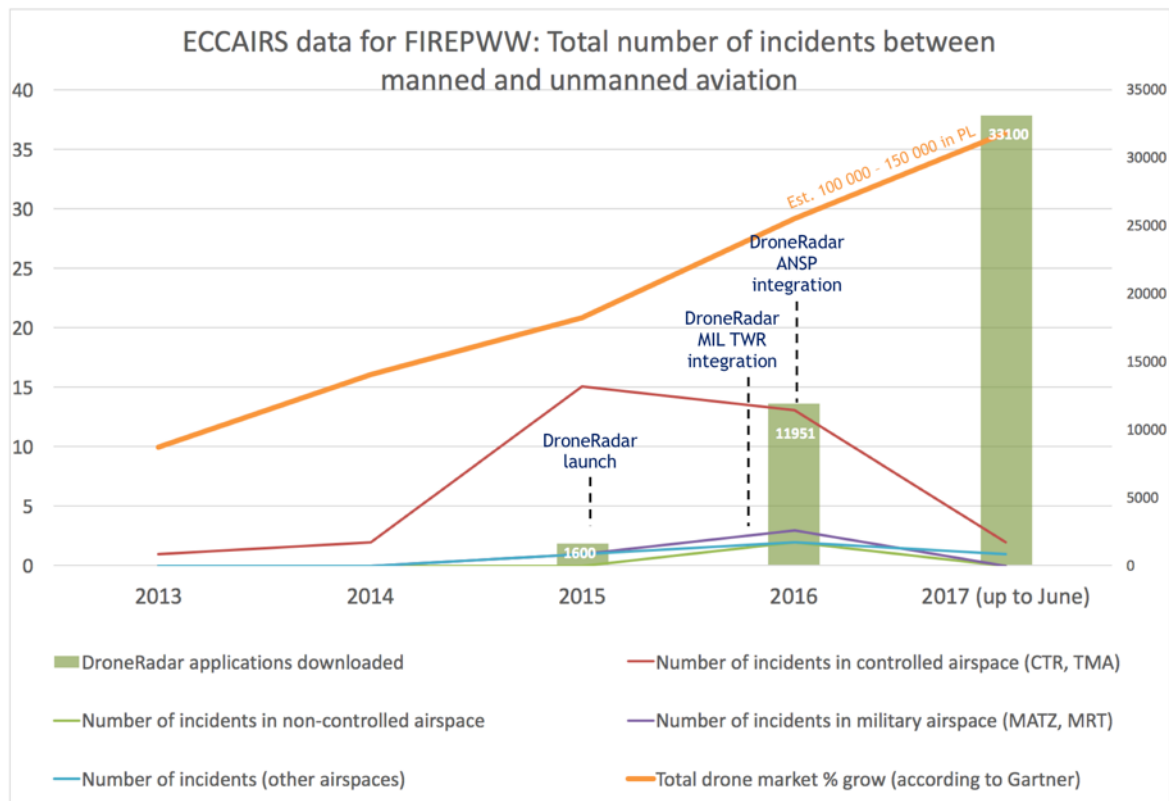
2-way non-verbal communication is in use on 4 controlled airports in Poland since Jul 2017

Partnering with Drone manufacturers we deliver:

- Mission Planning for evaluation of the terrain and airspaces
- Management for flight approval workflow
- Emergency situation where **Fail Safe** mode can be remotely invoked by ATS

# Role of education in reducing number of incidents based on ECCAIRS

- ✓ 33000+ downloaded apps
- ✓ 96% of certified Drone Operators in Poland are using DroneRadar



Two way non-verbal communication

real usecase