



POLSKA AGENCJA ŻEGLUGI POWIETRZNEJ  
POLISH AIR NAVIGATION SERVICES AGENCY



# DRONES in the Cloud

Piotr Sadowski PANSA

# Flying UAVs in a safe way...





# UTM architecture requirements

- cloud-based
- microservices modules
- open-standards data interfaces
- client web and mobile access
- development-test-deploy continuous integration





...we deployed  
**UTM system**

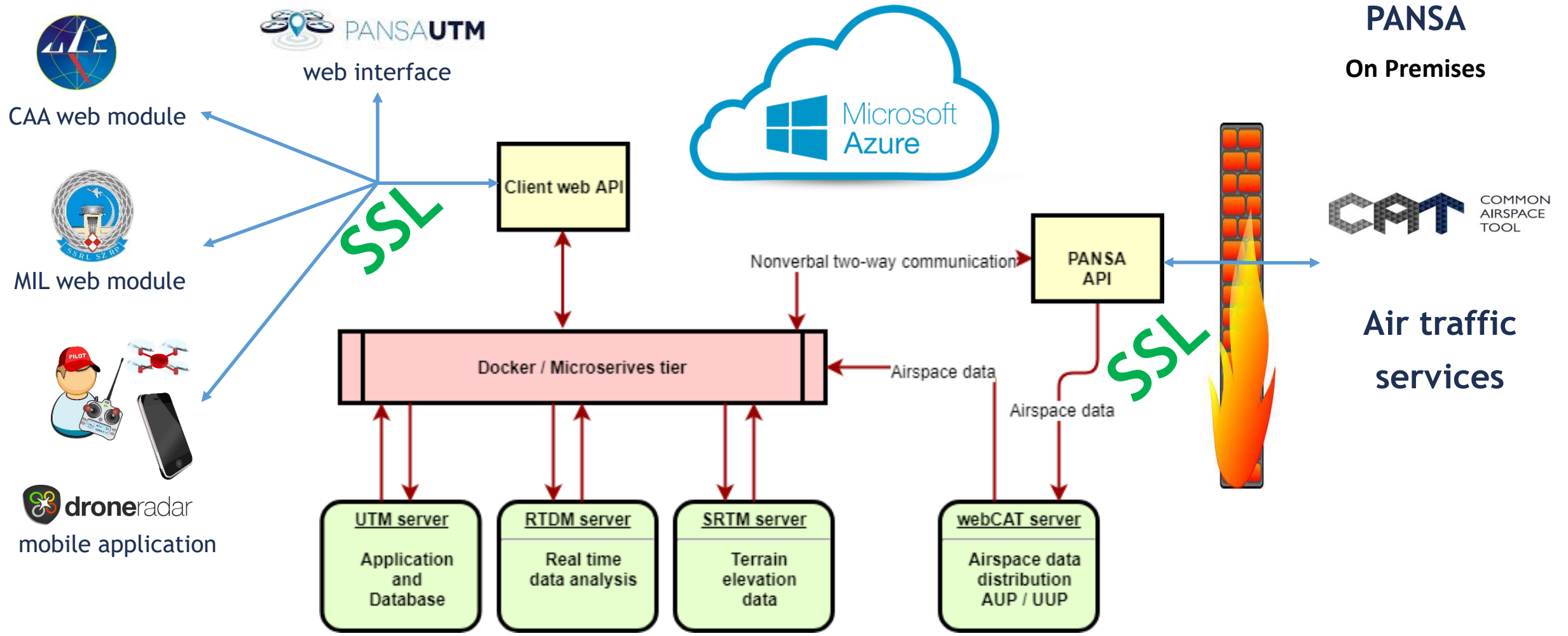


PANSA**UTM**

## **FUNCTIONS**

- drones and drones operator data registration
- integrated airspace data service
- flight planning
- pre-tactical busy-airspace collision identification
- pre-tactical geofencing
- operator - ATC nonverbal communication
- emergency procedures
- and more...

# UTM cloud-based architecture



# UTM UAV operator interface

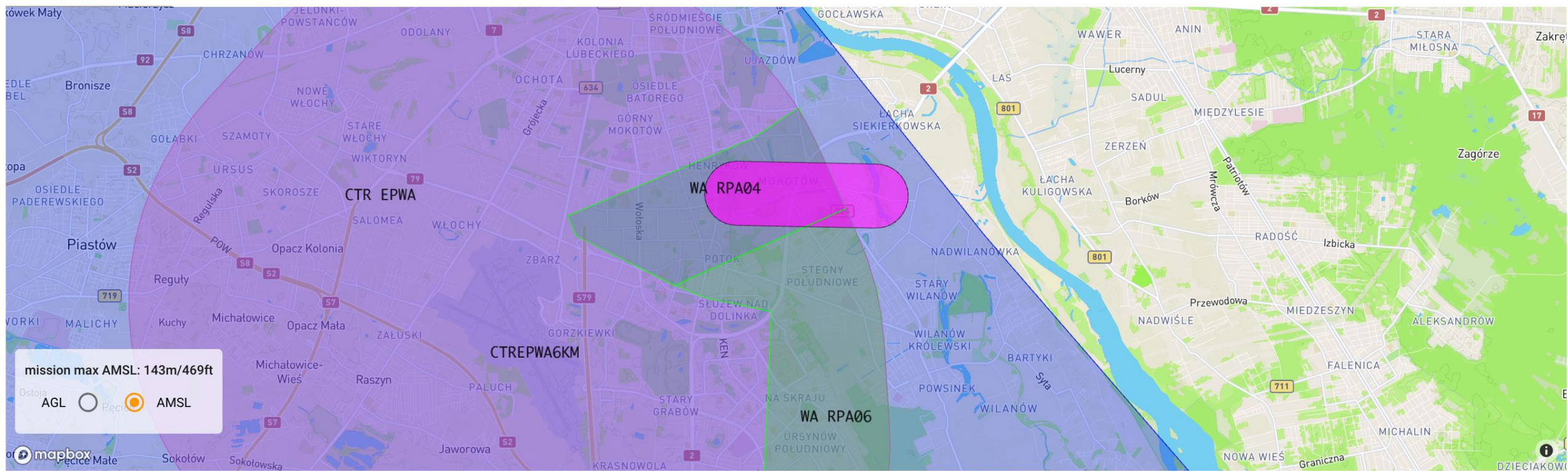
The screenshot displays the PansaUTM DronePilot web interface. At the top left, the title "PansaUTM DronePilot" is visible. A navigation sidebar on the left contains the following items: "Panel główny" (highlighted in orange), "Misje", "Drony", and "Certyfikaty". The main content area features five mission status panels:

- Misje oczekujące** (0 / -1): Represented by an orange question mark icon.
- Misje zaakceptowane** (0 / -1): Represented by a green checkmark icon.
- Misje odrzucone** (0 / -1): Represented by a red 'X' icon.
- Misje utworzone** (0 / -1): Represented by a cyan download icon.
- Spotkania**: Represented by a pink calendar icon.

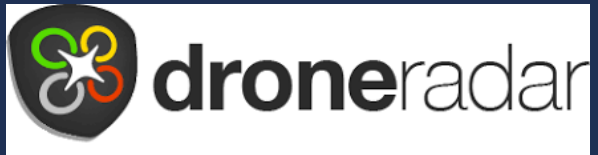
Each panel contains a header with the status name and count, a colored icon, and a text input field labeled "Misje".

At the bottom left, the interface includes the PansaUTM logo, the text "Powered by HAK-E", and the drone radar logo.

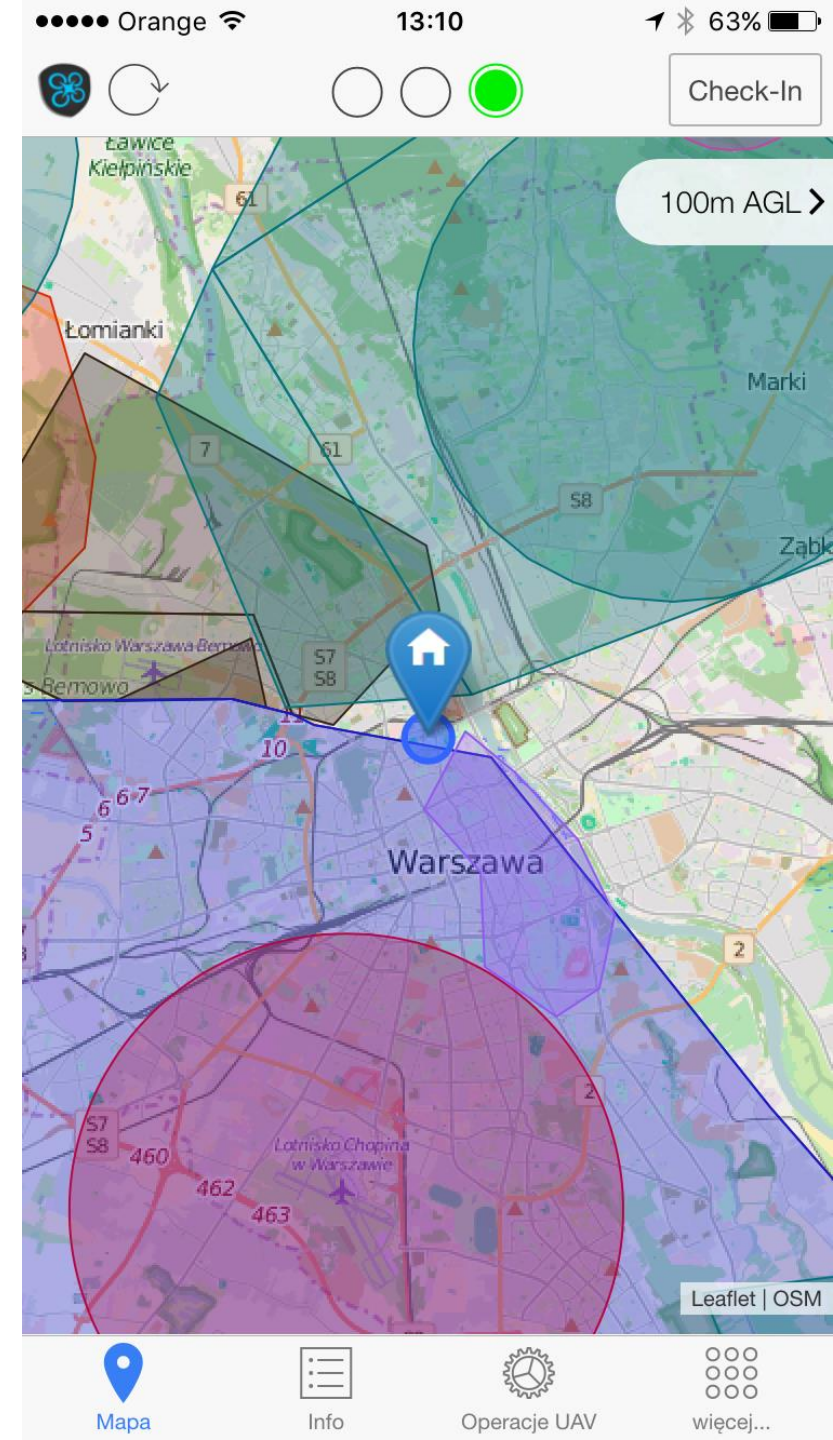
# UTM dFPL editor







# mobile application



# UTM development

- Civil Aviation Authority certification until 2019

- integration with airspace management

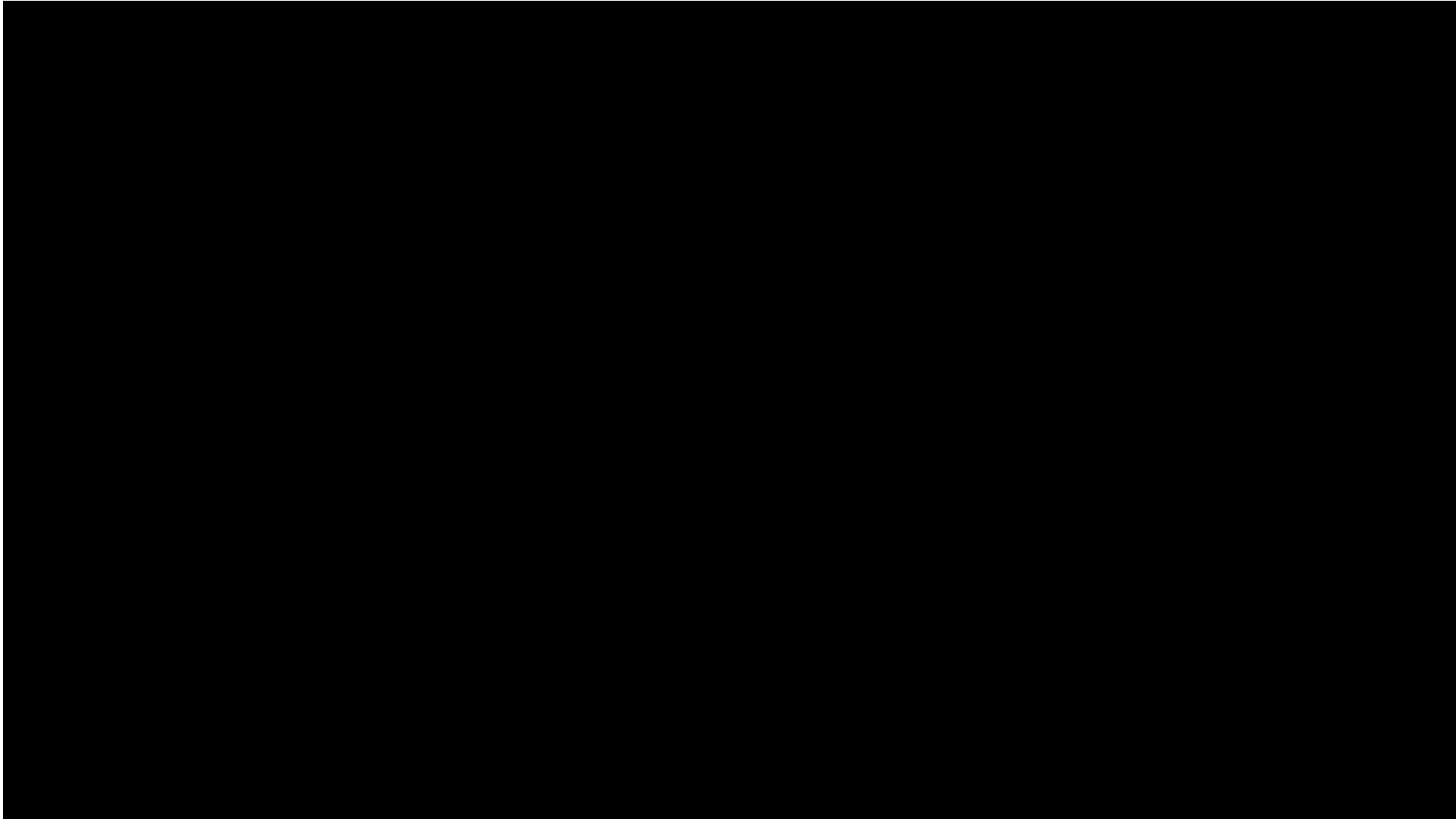


COMMON  
AIRSPACE  
TOOL

- live drones tracking

- risk assessment support

-  **U-space** implementation







THANK YOU

[piotr.sadowski@pansa.pl](mailto:piotr.sadowski@pansa.pl)