Unmanned aerial vehicles and critical infrastructure

Dr. sc. ing. Ilmars Blumbergs

Science for Peace and Security (2024)
Energy infrastructure resilience in response to war and other hazards
Advanced Research Workshop (ARW) supported by NATO

POLAND, Rzeszów, 25.09.2024

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This workshop is supported by: The NATO Science for Peace and Security Programme

Riga Technical University

Mechanical Engineering, Transport and Aeronautics

Faculty of Civil and Mechanical Engineering

INSTITUTE OF AERONAUTICS

AERONAUTICS, SPACE ENGINEERING AND TRANSPORT INSTITUTE

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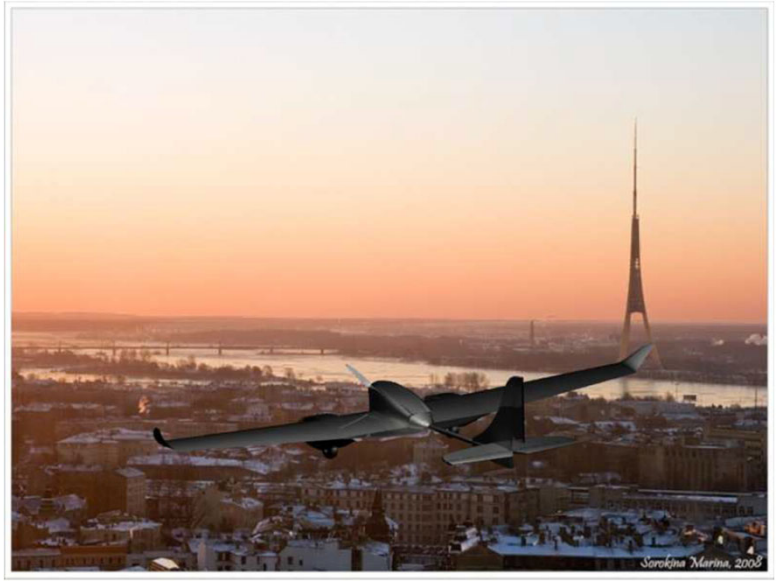
Background

MULTIPURPOSE UNMANNED AERIAL VEHICLE DESIGN (2008)

Project no. 2010/0256/2DP/2.1.1.1.0/10/APIA/VIAA/070 "Development of an unmanned aviation complex and creation of industrial prototypes of aircraft for solving tasks of the national economy of Latvia« (2010)

Aerodynamically efficient design and development of an unmanned aerial vehicle (UAV) implementing an environmentally friendly 4R circular economy concept in aviation (4R-UAV) (2021)



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Energy infrastructure resilience in response to war and other hazards – Workshop, 23-26 September 2024, Rzeszów, Poland

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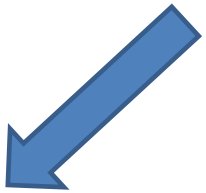
Action directions to ensure safety in the field of UAV



System of providing legal UAV flights

System of preventing illegal UAV flights

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Threads from illegal UAV flights and how to eliminate them

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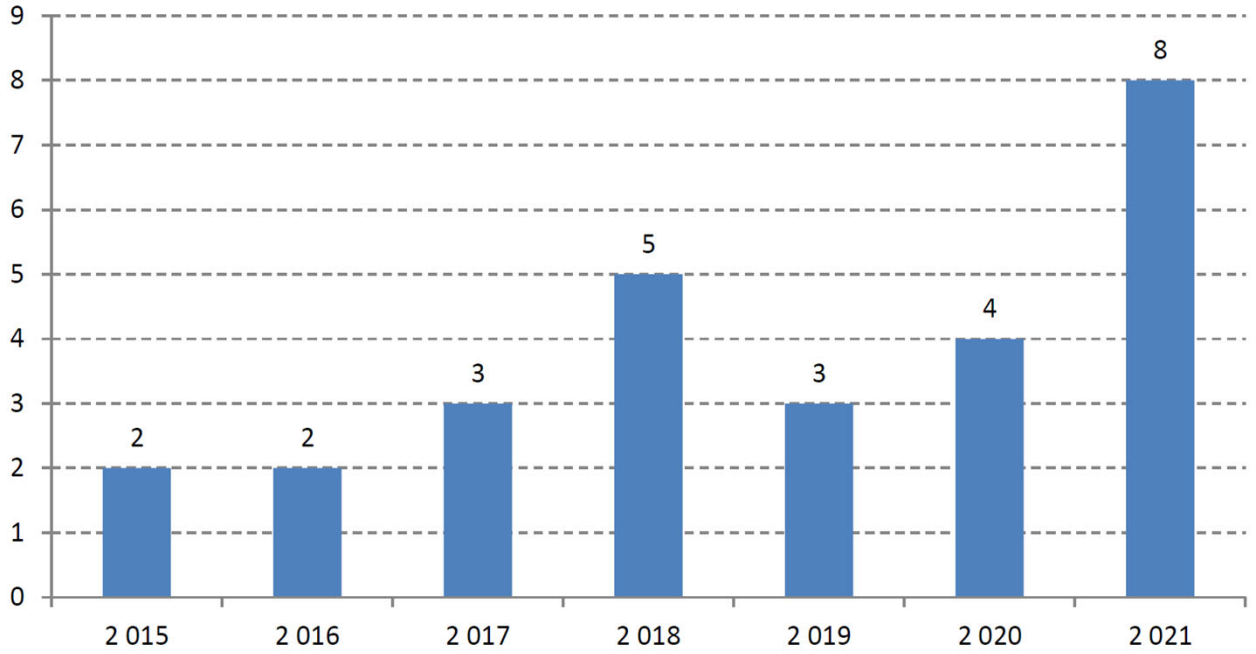
Dangerous situations with UAV in Latvia (CAA report)



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Law « On Aviation» (Par aviāciju)

- Changes have been made to the legislation that allows aircraft to land over closed areas – airport military facilities, prisons, etc.
- Legislative changes have been made and the procedure for neutralizing unidentified flying objects has been optimized. The full list of restrictions is available in the Cabinet of Ministers' regulations of April 23, 2024 no. 248 "Regulations for the flight of unmanned aircraft» (Bezpilota gaisa kuģu lidojumu noteikumi)

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The wreckage of the Russian unmanned aerial vehicle, "Shahed" type drone that fell on September 7 2024 in the Gaigalava parish of Rēzekne region, after the site survey and deactivation of the drone.

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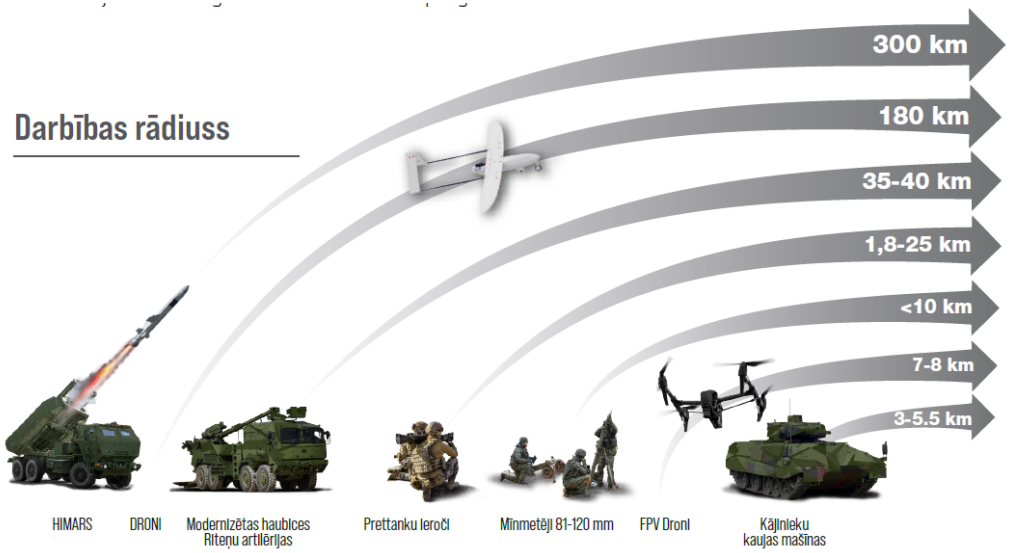
Integration of drones into National Army Force development concept



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Notification system and system of providing legal UAV flights

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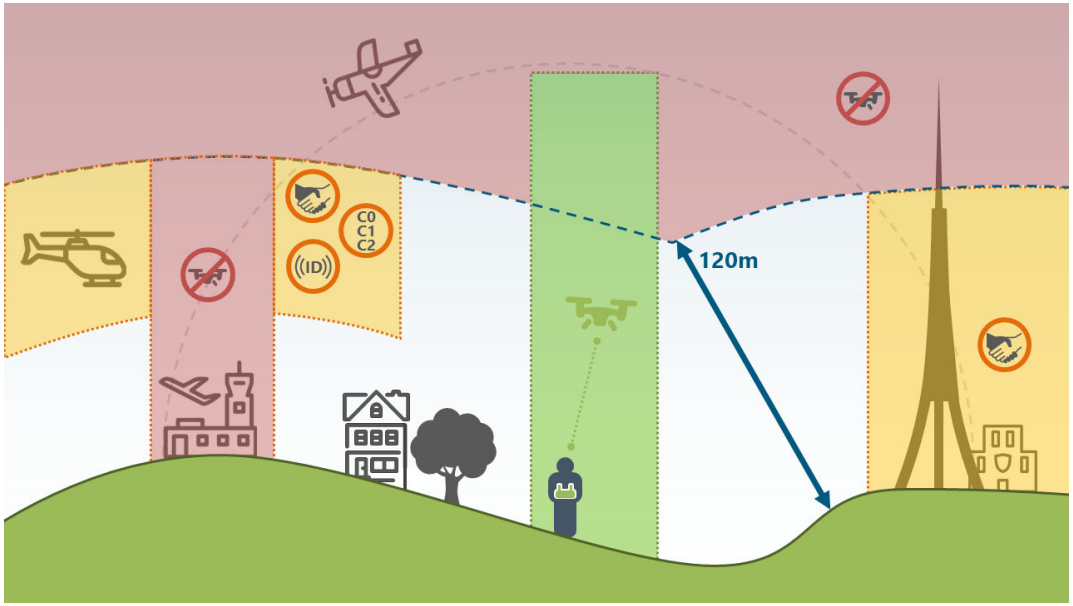
Description of the main requirements for unmanned aircraft flights in the open category are available on the website of the Civil Aviation Agency: droni.caa.gov.lv



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AERONAUTICAL INFORMATION PROVISION FOR UNMANNED AIRCRAFT FLIGHTS OPERATION

1.From 2 January 2020, SJSC "Latvijas gaisa satiksme" provides a new service - the Electronic Unmanned Aircraft Restrictions Viewer (eUARV), which provides the aeronautical information necessary for the operation of unmanned aircraft.
2.SJSC "Latvijas Gaisa Satiksme" the “Electronic Unmanned Aircraft Restrictions Viewer” (eUARV) provides visualization of UAS geographical zones, both permanent and temporary elements of the airspace structure and its active time, that may affect the operation of UA flights, in a form of an interactive map. If a permission is required to perform UA flights, the procedures for the permission obtaining is indicated.
For example, eUARV represents:

- •UAS geographical zones;
- •permanent active airspace structure elements;
- •temporary elements of the airspace structure for which UA flights are prohibited during their active operation (at a time when they are not active, UA flights may be operated);
- •UA flight restrictions near certified aerodromes and certified heliports.

eUARV is available for users on website https://airspace.lv/drones or on website https://ais.lgs.lv by pressing the symbol:
3.The principles of Flexible Use of Airspace have been introduced into the airspace of the Republic of Latvia, which requires the remote pilot, when planning a UA flight, to consider that the activation of temporary airspace structure elements is known not earlier than one day in advance (airspace use plan for the next day is available by 1500 (1400) UTC at the latest).

Data/information in the eUARV is updated automatically every 5 minutes.

4. In the eUARV it is possible to filter out information referred to in the paragraph 2, depending on:

- UA total take-off mass;
- Desired flight area (lateral and vertical limits);
- Planned flight time.

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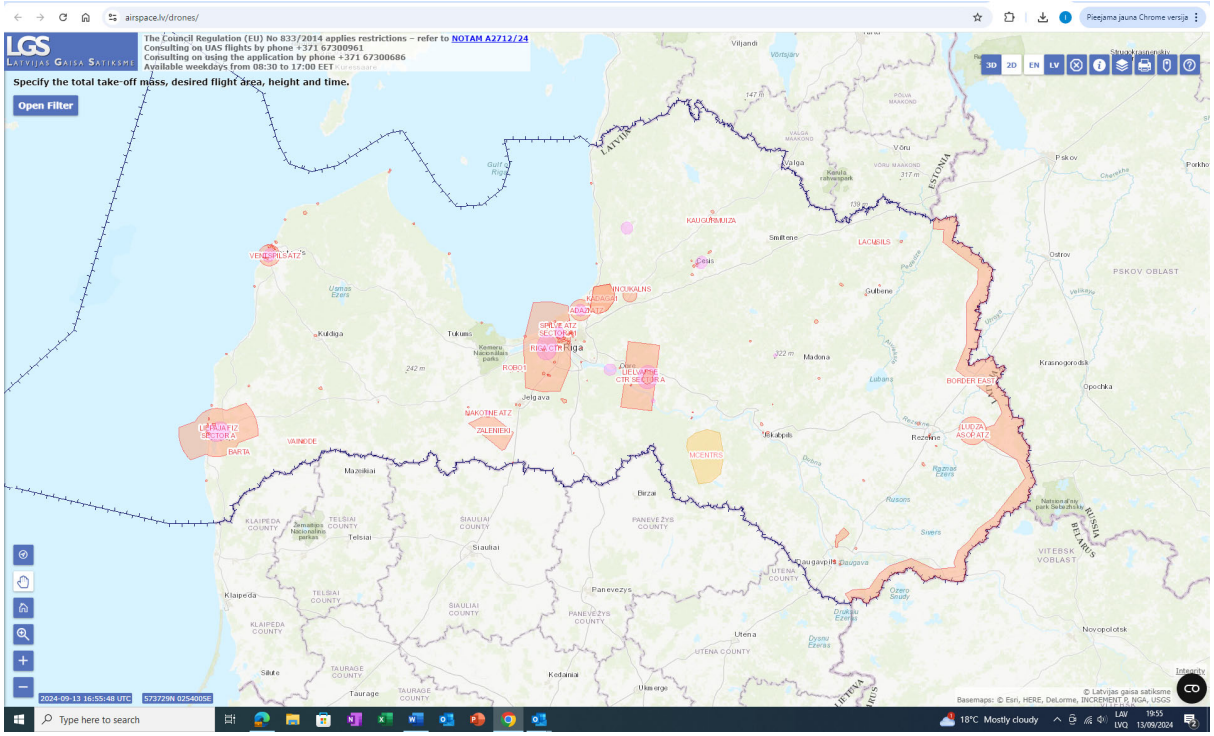

When the total take-off mass, the desired flight location, height and time is selected, you must press the “Apply” button.

Click Apply to create a situation awareness report

Apply Reset

When this is done, identified flight restrictions will be opened, both listed and displayed on the map.

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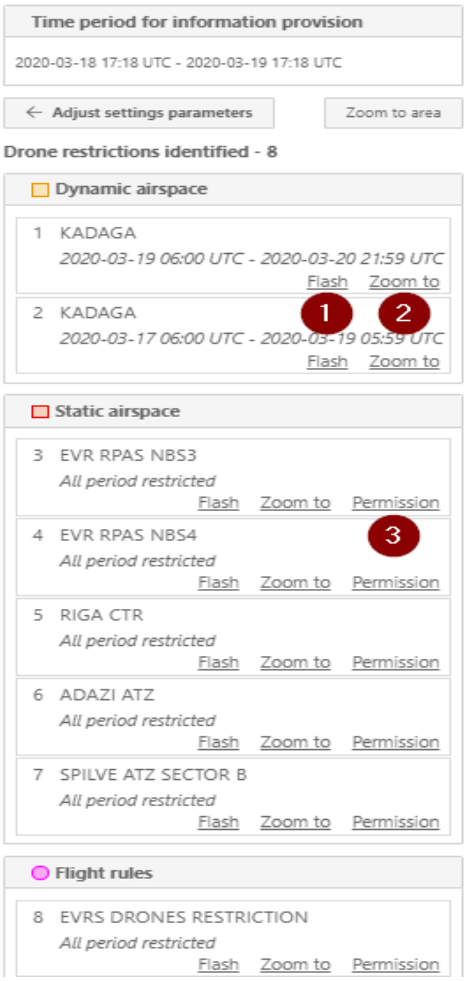

What needs to be solved and needs to be done:

- Solving communication problems between different organizations (armed forces, civil aviation services, local authorities, etc)
- Ensuring a trusty system to inform society about unidentified flying objects
- Easy-to-use system for UAV and flight registration and real-time monitoring
- Safety of information traffic and safety of main service provider
- Monitoring of UAV flights and deviations from flight pass
- Procedure and tools for neutralizing uncontrolled UAV
- Public discussion and decisions about acceptable flight zones for UAV flights and provided services. Flight corridors for UAV.
- Unified registration and identification system, at least for the EU.

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It sounds like a good topic for the Horizon project?!

Universities are the right ones to lead the project!

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The Staff Exchanges (SE) competition HORIZON-MSCA-2024-SE-01 opened on September 19, with a deadline of February 5, 2025. The tender budget is almost 100 million euros…

Thank You for your attention!

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