



## *III Workshop 2024 - EMBM-VD*

Identification of targets and control of drones

# CONTEXT:

- My Contribution:
  - Focus on the 3D representation of drones in a simulated environment.
  - Integration of the project with VR technologies to enhance interaction and realism





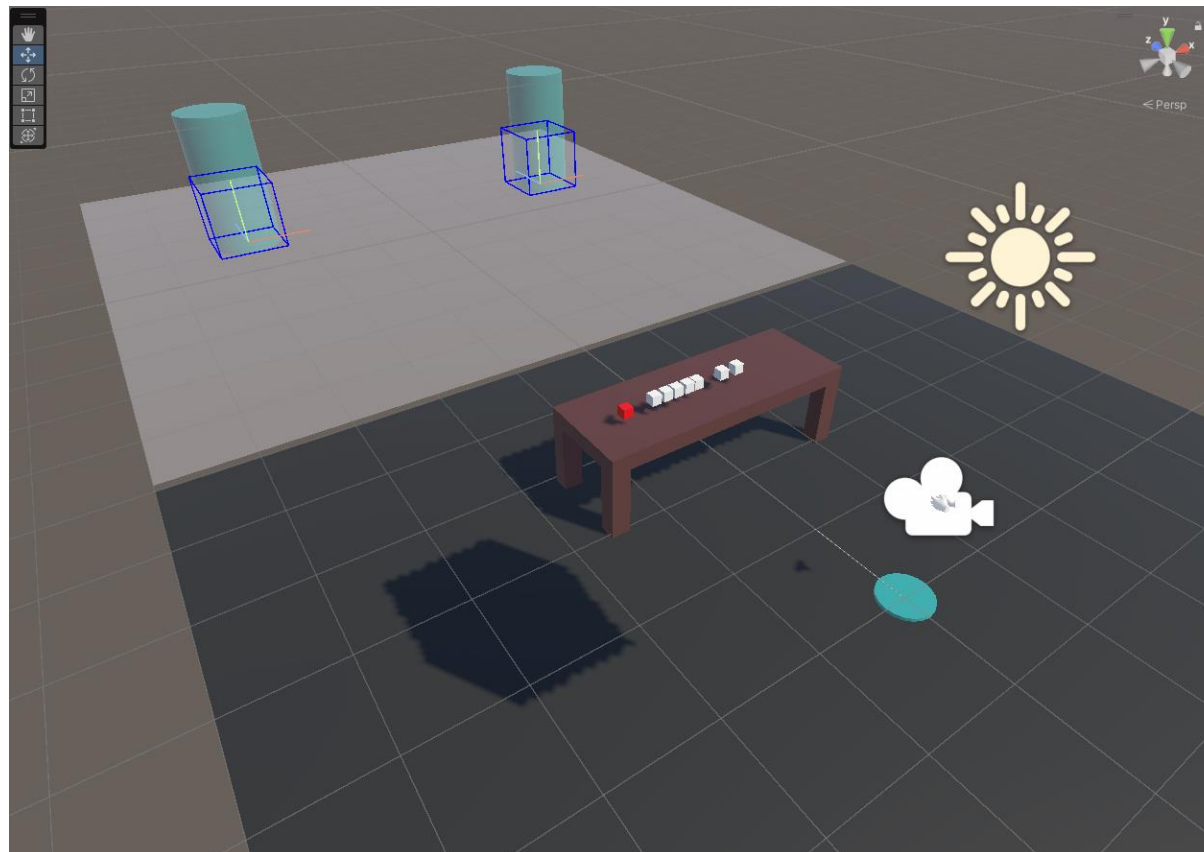
# SUMMARY

- Development of Virtual Reality Simulation
- Drone Control with Virtual Reality
- Augmented Reality Setup on Meta Quest 3
- Integration with Unity and Cesium for Airspace Simulation
- Development of Position Updates with MQTT
- Facilitating Interaction with InputField and Lists
- Drone Overview and Visualization on Map



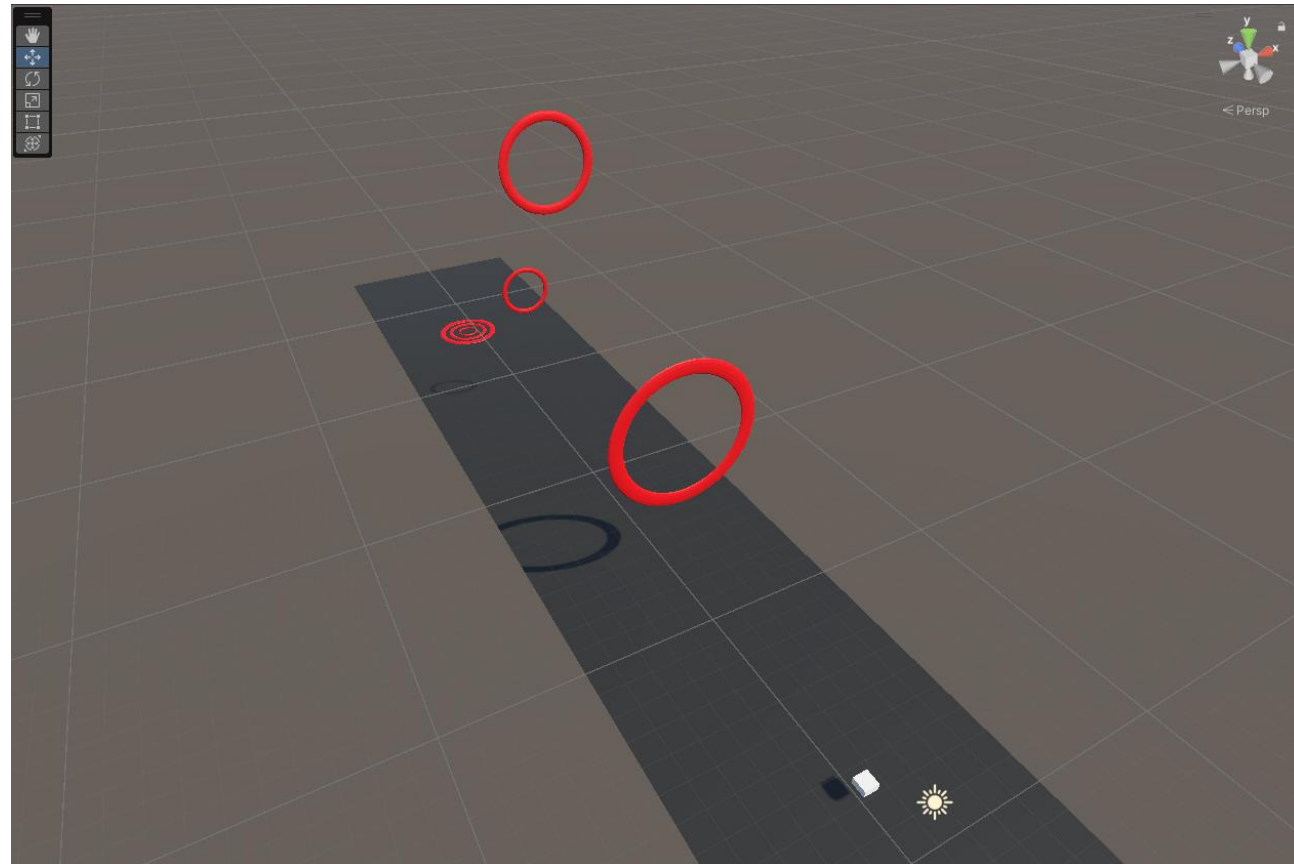
# Development of Virtual Reality Simulation

- Implementation of head and hand interaction in the virtual environment.
- Interaction with objects (cubes) in the scenario.



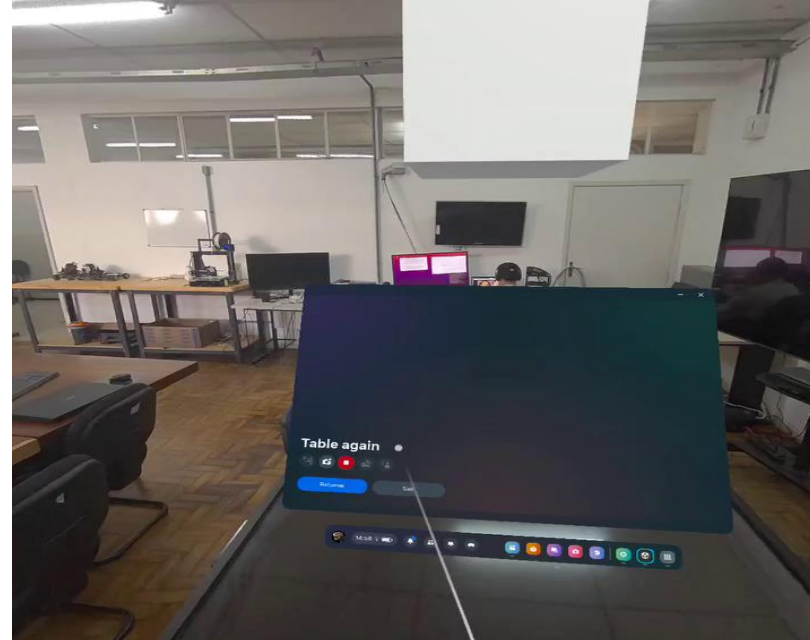
# Drone Control with Virtual Reality

- Flight Simulator



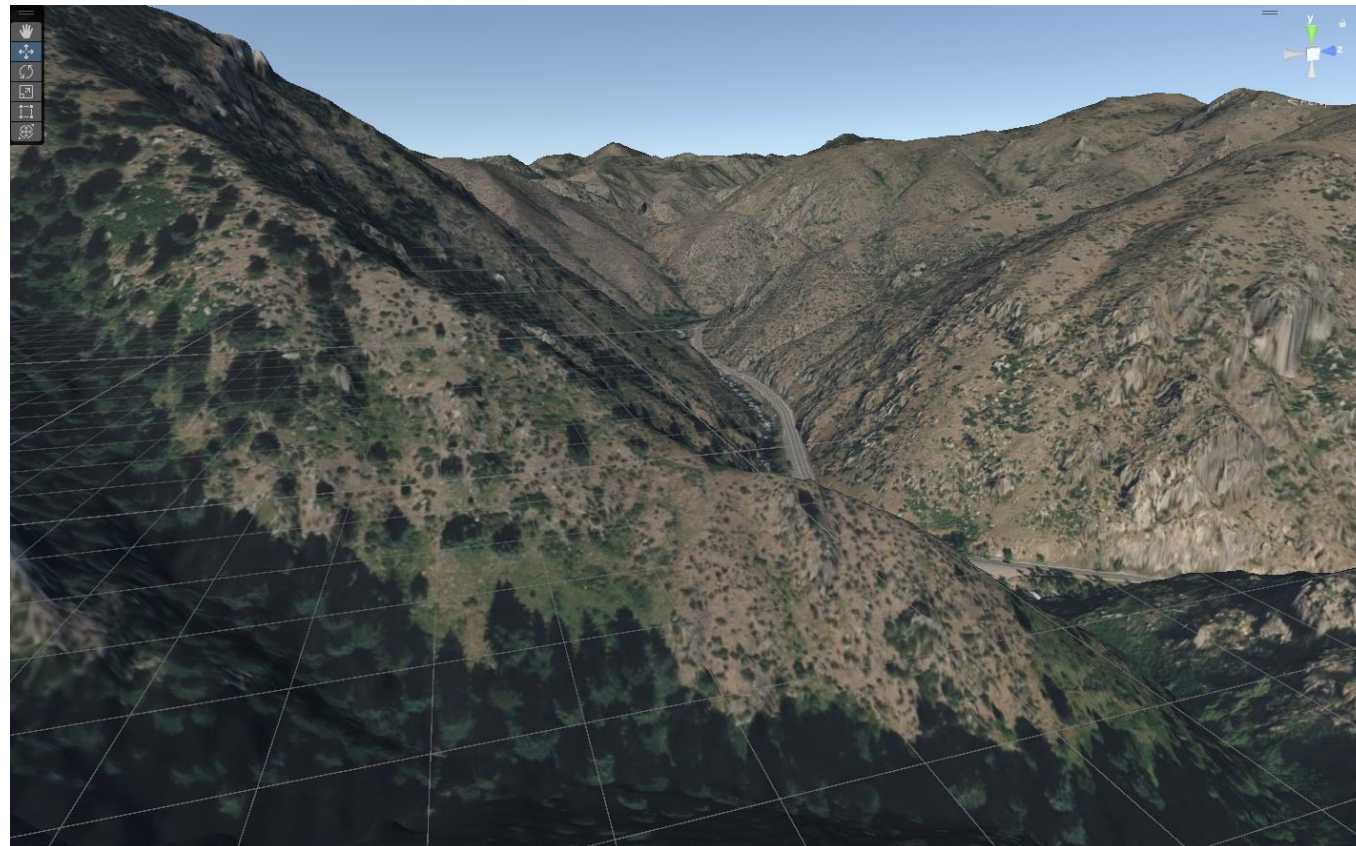
# Augmented Reality Setup on Meta Quest 3

- Meta Quest 3 setup for capturing and interacting with the physical environment.
- Development of tests with spawning cubes and spheres and physical interaction with the environment.



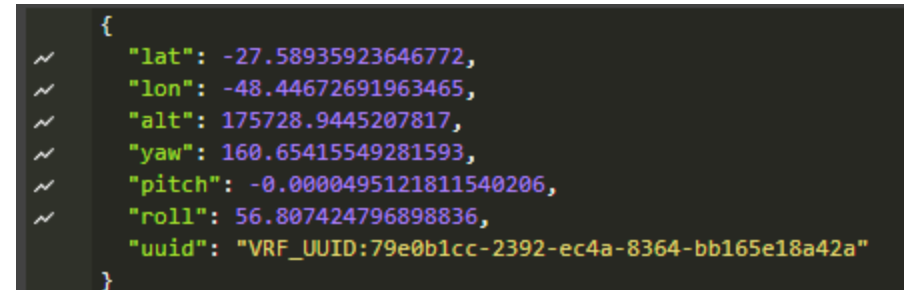
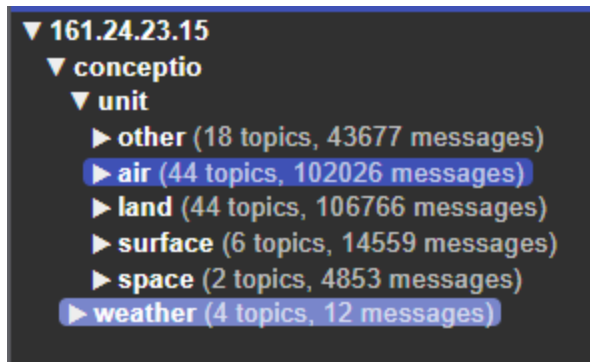
# Integration with Unity and Cesium for Airspace Simulation

- Unity integration with Cesium to represent spacecraft locations on the world map.



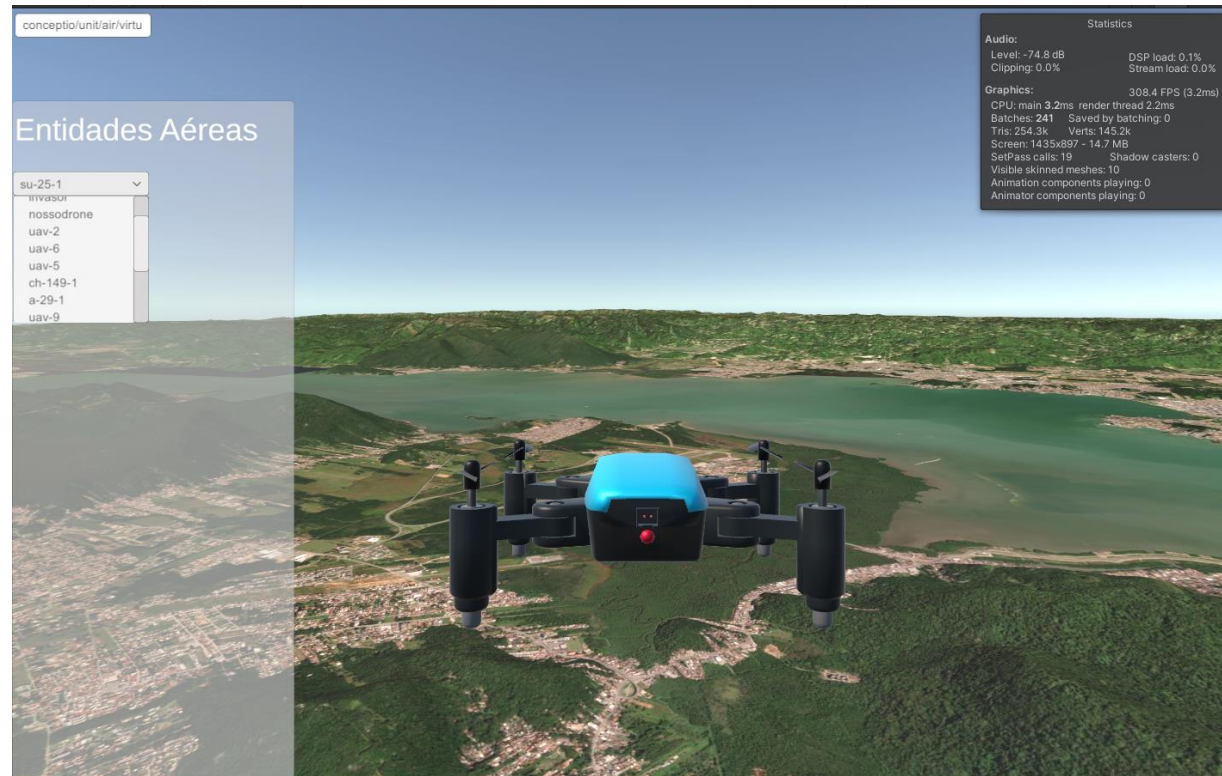
# Development of Position Updates with MQTT

- Drone positions are updated in real-time through coordinates received via MQTT.



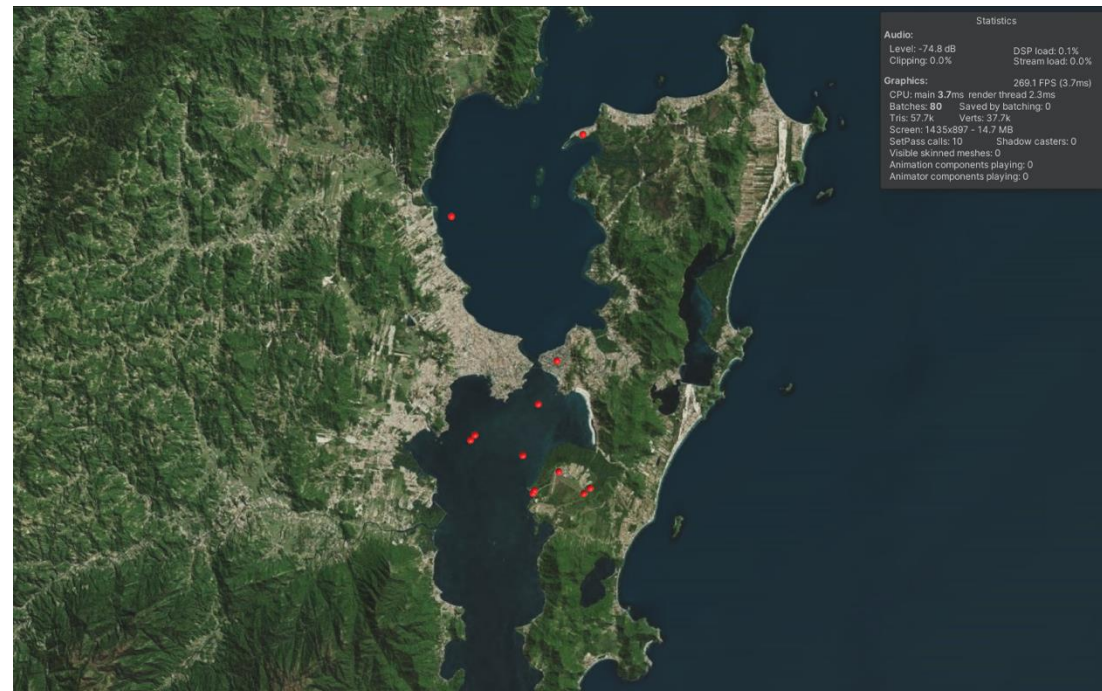
# Facilitating Interaction with InputField and Lists

- Implementation of an input field to facilitate switching MQTT paths.
- Idea of creating a list of present drones, similar to VR Forces, to enhance user experience.



# Drone Overview and Visualization on Map

- Each red dot represents an active drone, which can be clicked to instantly switch to a 3D view of that specific drone.
- Upon selecting a drone, users are seamlessly taken to a 3D visualization, providing a comprehensive overview of the drone's environment and status



# Final considerations

# Questions/Comments?!



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