Łukasiewicz
Institute
of Aviation

Engineering simulator
for unmanned aerial vehicles
in a controlled virtual test environment

ESIM
ENGINEERING
SIMULATOR

Tool for engineering simulations of various unmanned aerial vehicle configurations to optimize parameters and test new concept.
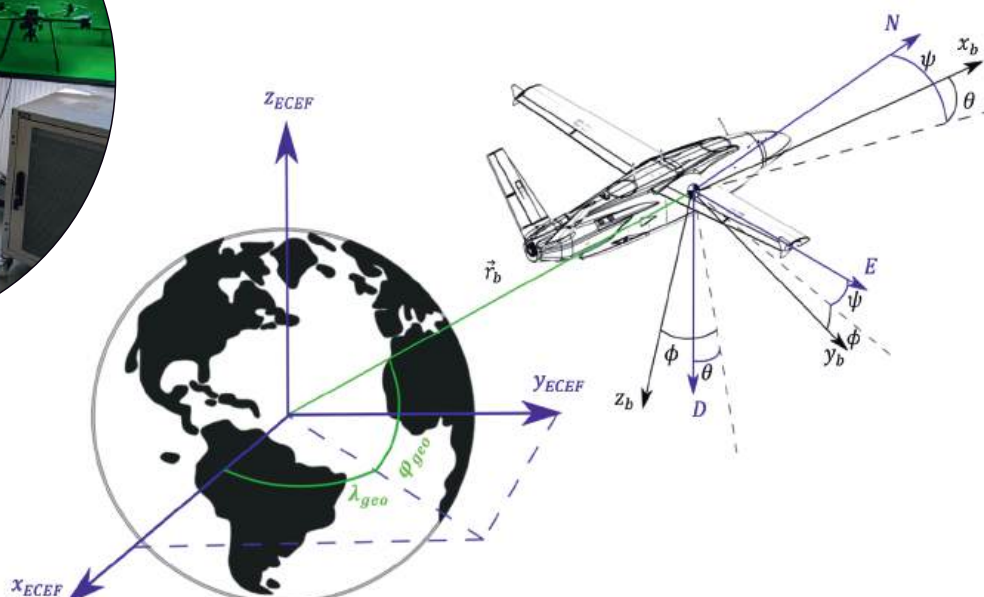

CHARACTERISTICS

○ Modeling: Digital Twin of the UAV and the environment with interactive elements.

○ Simulation modes: HIL (Hardware In the Loop) and SIL (Software In the Loop).

○ Testing UAV in configurations with different types of propulsion.

○ Testing UAV with different types of payloads, e.g., cameras, sensors, cargo.

○ Performance analysis of UAVs in different structural configurations and varying takeoff weights.

○ Energy consumption analysis.

○ Creating virtual UAV missions in selected atmospheric conditions.

○ Flight stability assessment.

○ Analysis and development of navigation systems, control systems, and mission management algorithms.

○ Test flights on a virtual UAV model.

COMPETITIVE ADVANTAGES

○ Early–stage problem identification.

○ UAV technology optimization.

○ Time–to–market reduction.

○ Cost and risk reduction.

○ Verifying the adaptation to customer needs.

○ Flexibility in testing different concepts and configurations.