

# NESTOR

**The Baltic Trial, one of the three trials of the EU financed project NESTOR, took place successfully in the Curonian Lagoon in Republic of Lithuania.**



On 15-17 of November 2022, the first of the three trials of the NESTOR project took place in the Curonian Lagoon (hereinafter - the trial area), during which the latest technologies developed in NESTOR were tested. These technologies aimed at improving the monitoring of illegal migration and smuggling across borders and also facilitating the exchange of data between the State Border Guard Service under the Ministry of the Interior of the Republic of Lithuania (hereinafter - SBGS) and other Lithuanian and foreign institutions.

According to the trial scenario, the 16 km long Lithuanian-Russian border in the Curonian Lagoon was protected from attempts to cross it by motor boats, plain boats, drones/aircraft, from smugglers possibly dressed in diving suits. During the trial the following modern technologies were tested:

- Radio frequency monitoring and localization system for identification of radio signals. This system detects, classifies and processes known and unknown RF signals using a distributed

network of mobile and fixed RF receivers and direction finders, including appropriate signal processing software. All received information is sent for further processing to the NESTOR control and coordination center.

- Components for analysis of live video streams. The main goal is to process live video streams from NESTOR's various optical sensors (visual, night vision, thermal) and locate, recognize, classify and track objects using artificial intelligence models.
- Unmanned devices controlled from the NESTOR command and coordination center for monitoring the underwater space (unmanned underwater drones) and aerial surveillance of the territory (tethered drones).
- A command and coordination center system that integrates all the different monitoring, control, analysis and decision support modules through an interoperability layer and provides a unique collaborative environment for planning and conducting operations using text messaging, map board and video conferencing.

The NESTOR trials tested the latest technologies that were developed in the project, such as a tethered drone, an underwater drone, a video surveillance camera, radio frequency monitors and a holistic wall surveillance system that integrates all of the above technologies. The test site is depicted in Figure 1.

The NESTOR project ([www.nestor-project.eu](http://www.nestor-project.eu)), which started in November 2021, is implemented by 21 consortium partners, among which is the State Border Guard Service under the Ministry of the Interior of the Republic of Lithuania, from 13 European Union countries. NESTOR is funded by the European Commission's Horizon 2020 program. The trial site is depicted in Figure 1.

During the trial, the early warning system that was developed in the project as well as the technical equipment and their enhancements for detecting and recognizing objects under water, on water, in the air and on land were tested. During the tests, three scenarios were carried out, during which the aim was to demonstrate how the NESTOR system can help service officials to record violations of illegal migration or the transportation of contraband across the external border of the Republic of Lithuania and, as a consequence, the European Union by land, air and waterways.



Figure 1: Lithuanian trial site.

The tests in the Curonian Lagoon were successful and provided valuable experience to service officials, who had the opportunity to learn how the installation and configuration of the latest technologies developed in NESTOR and the use of modern detection tools expands the possibilities of detecting and monitoring contraband.

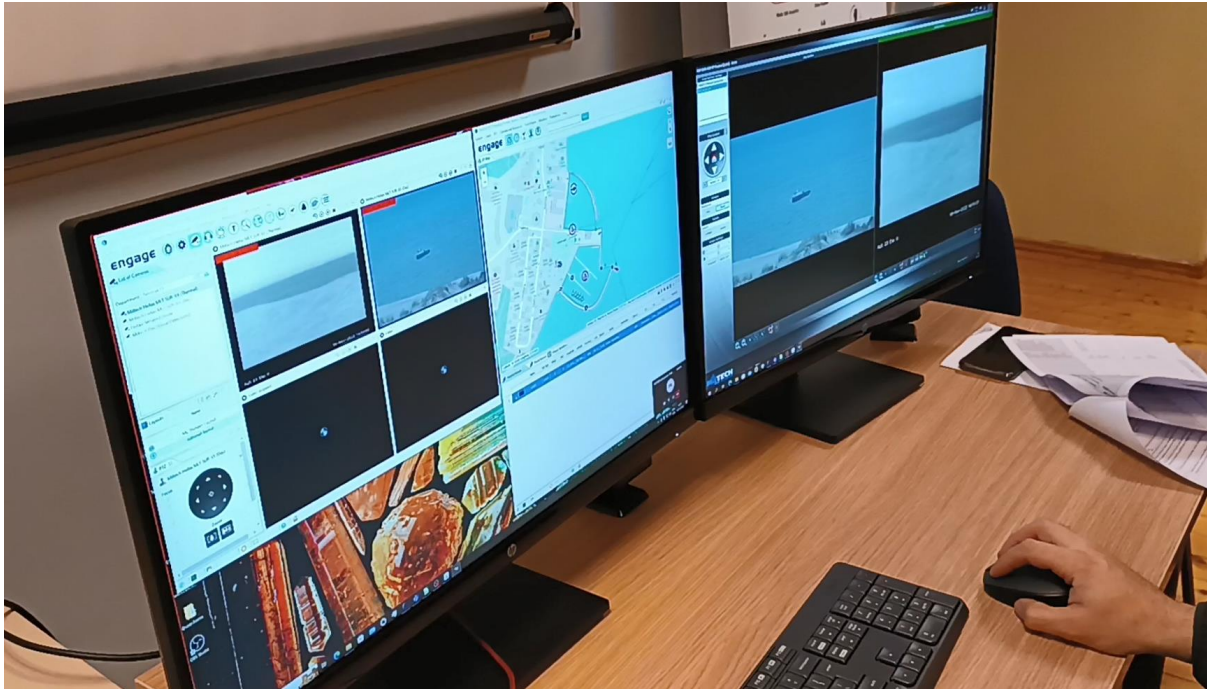


The NESTOR project is intended to improve border surveillance and safeguard the external borders of the EU, part of which are those of the Republic of Lithuania, and facilitate the exchange of data between the State Border Guard Service and the border protection authorities



of other European Union states, as well as other institutions such as the Border police or port authorities.

NESTOR solves the common challenge of the EU countries, i.e., the protection of European sea and land borders. To this end, the NESTOR project aims to demonstrate a fully functional next-generation holistic border surveillance system that ensures border situational awareness across sea and land borders, following the concept of European integrated border management.



The main goal of NESTOR is to motivate the Border Police Services of the EU countries to use the most advanced technologies that help the member states achieve a comprehensive understanding of the situation at the external borders and strengthen the decision-making and response capabilities of their security authorities. To this end, the NESTOR project develops a flexible, integrated solution adaptable to the needs of end users, combining comprehensive monitoring capabilities, timely pre-awareness of developing situations and feeds from the latest sensing devices by using off-the-shelf components. NESTOR technologies have been integrated to interoperate for detecting, assessing and responding to illicit activities in border surveillance missions in both land and maritime operations. The whole concept of the NESTOR project will be evaluated in three international trials in Lithuania, Cyprus and Greece/Bulgaria, which include monitoring of both land and sea border operations.



The officials from SBGS and the members of the NESTOR project from the EU, who participated in the trial, were convinced that the NESTOR platform can effectively and promptly help operators monitor the security of the external borders of the Republic of Lithuania and the European Union, and detect suspicious activities through information collected by sensors, surveillance cameras, drones, intelligently processed and conveniently visualized through the NESTOR platform.

Testing new solutions and technologies provides service officers with knowledge on the latest technologies, their functionality and capabilities. The knowledge acquired through the NESTOR trial will be used in updating the border monitoring systems in Lithuania to ensure border monitoring at the external EU border of the Republic of Lithuania.