

# NEWSLETTER



ODYSSEUS

## ODYSSEUS H2020 PROJECT

*Preventing, Countering, and Investigating Terrorist Attacks through Prognostic, Detection, and Forensic Mechanisms for Explosive Precursors*

### ODYSSEUS Newsletter No 3.

Dear readers,

We are pleased to share with you the third ODYSSEUS newsletter!

The ODYSSEUS project is counting two and a half years of activities and developments. Our newsletter aims to provide you with latest information on the project's results, on recent events and achievements.

This edition focuses on the pilot use case trial of the ODYSSEUS Project held in Greece offering for the first time participating LEAs the chance to test almost all ODYSSEUS platform components developed in the project in the course of one pilot use case scenario.

Furthermore, the Newsletter presents the highlights of a joint workshop of three Horizon 2020 partner projects, ODYSSEUS, INHERIT and Melchior. In view of the success of this workshop another joint workshop is planned among the three projects for October 2024.

We hope you enjoy this latest newsletter and wish you all a nice summer break!

The ODYSSEUS team



## Main Topic: ODYSSEUS Consortium implements PUC 2 in Greece

In April 2024, PUC 2 was executed at a test site of the Hellenic Police in Athens, Greece.

In April 2024, PUC 2 took place at the training facilities of the Division of Police Special Forces of the Hellenic Police, which is located at former Olympic Shooting Range at Markopoulo, Mesogaias East Attica, in the outskirts of Athens. The PUC followed a use case scenario of detecting a clandestine HME factory based on the use of ODYSSEUS' prognostic, detection & forensic tools.



*Consortium partners at PUC 2 in Athens (Photo: P. Vasilev)*

In the main building of the training facility, a control room was established, allowing the monitoring of the operational use case exercise by following the operation of the online investigation tools on the ODYSSEUS Dashboard, the visualization of the investigation results as well as the video streams from the UGV, the sensor data streams of the mirSense water sensor from the UGV and the T4i Dover Ultra air sensor data streams from the UAV on the Dashboard.



*The control room in the use case scenario (Photo: P. Vasilev)*

The PUC also provided the opportunity to conduct further tests with the UAV and UGV platforms that carry the water and air sample sensors and to test the vapour sensor. Moreover, participants could for the first time test the robotic arm attached to the UGV which allows for opening doors and carrying containers that may include explosives or explosives precursors.

In the implementation of the use case scenario workflow, the first ODYSSEUS tool, introduced to the participants was an updated version of the ODYSSEUS Dashboard. The main functionalities of the presented Dashboard version were the following:

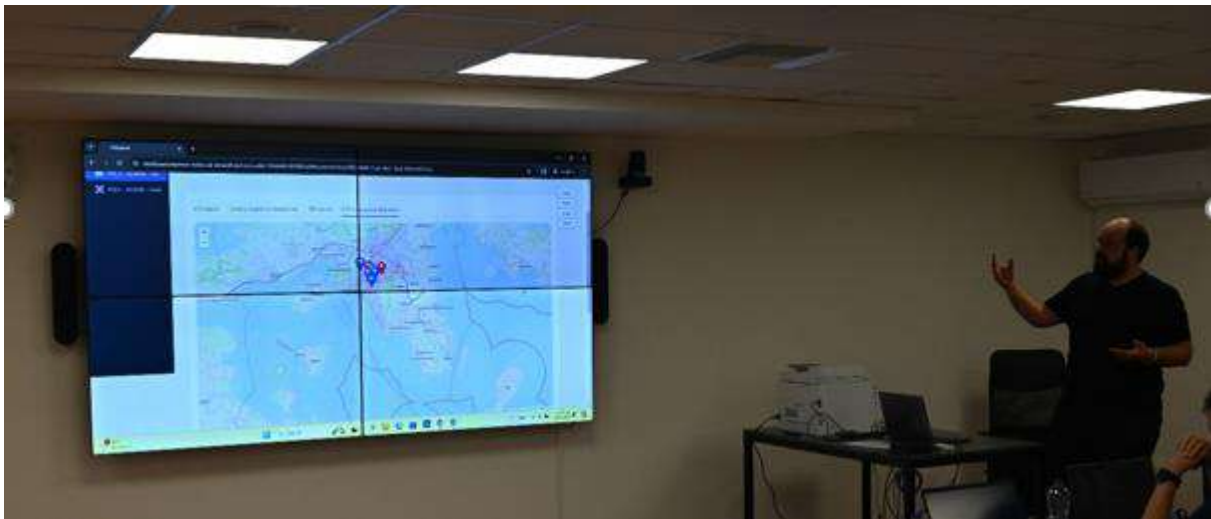
1. Admin page
2. Web data collection, data upload functionality, alert mechanism
3. Transactions page with transaction data collection
4. Text translation and analysis page
5. Visual analysis page
6. Social Network page
7. UAV and UGV page
8. Field Operation page

In line with the use case scenario, participants had the opportunity to see the web crawling and content analysis results, based on the synthetic chat data that had been prepared in advance of the meeting.



The results showed that the content analysis module was capable to differentiate HME-related web content from non-HME-related content.

Based on the analysis of other synthetic data, the supply chain monitoring tool was capable of identifying certain suspicious transactions based on the substances and their quantities purchased by certain users in a specific geographic area.



*Results of the Suspicious Transaction Detection tool (Photo: P. Vasilev)*

The results of these pre-investigation activities lead to the deployment of the UAV and UGV platforms, carrying the T4i Dover Ultra and the mirSense water sensor respectively, to identify precursor substances in the air and in the water in a specific geographic area, which based on the supply chain monitoring results, was identified as the location where a clandestine laboratory was expected to be.





*The UAV carrying the T4i Dover Ultra approaches the source of the explosive precursor (Photo: P. Vasilev)*

In addition to the UAV, the UGV was dispatched to find traces of explosives precursors in wastewater close to the expected location of the potential clandestine laboratory.



*The UGV releases a pipe into a water whole below to take a sample from the liquid within (Photo: P. Vasilev)*

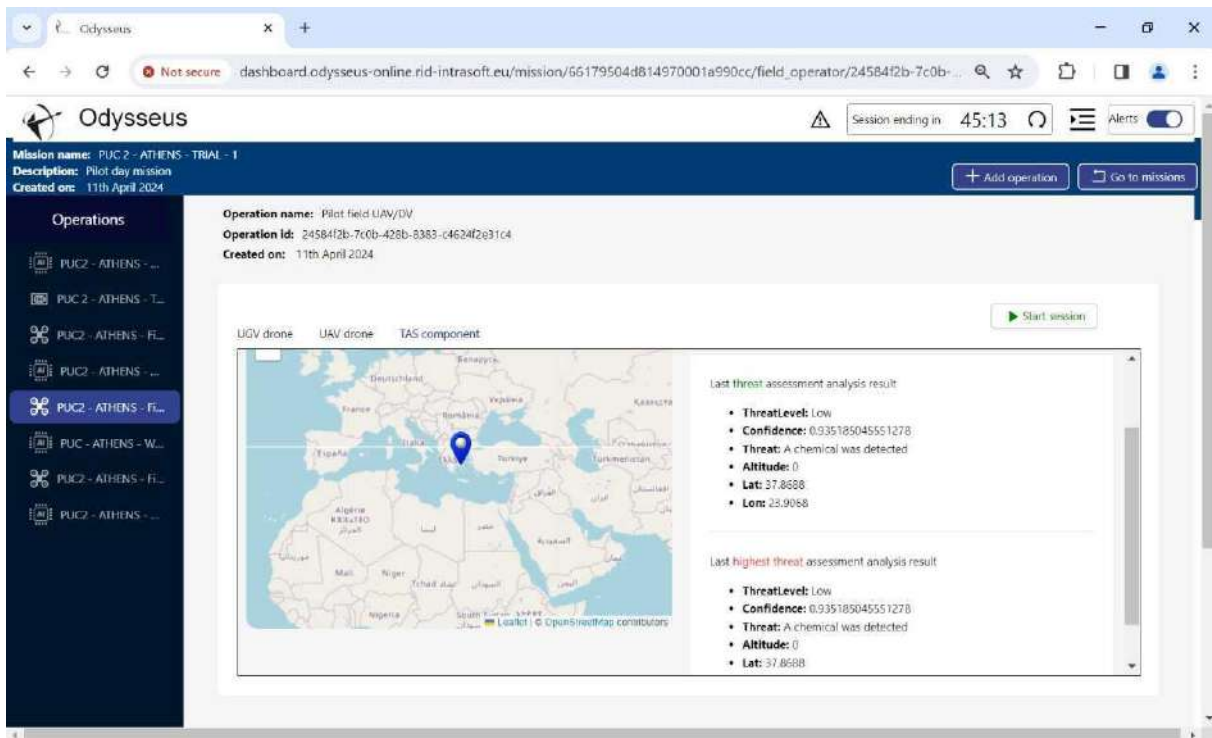
In another exercise, the UGV was used to open the door to a potential clandestine laboratory, to recover containers holding potential explosives precursors.



*The UGV opens the door with its gripper on the arm (Photo: P. Vasilev)*

In the next step the UGV entered the room to identify and recover the container holding the precursor liquid.

Based on the measurements of explosives precursors in the air and water in the area of interest, the ODYSSEUS Threat Assessment and Decision Support tool presented the threat level at the location of interest on the ODYSSEUS Dashboard.



*Screenshots of the TAS visualization on the ODYSSEUS Dashboard displaying the threat level at the location of interest*

The PUC was concluded with a comprehensive evaluation sessions, where participants provided their feedback to the effectiveness of the tools. Further in-depth evaluations was conducted online after the PUC, in which LEAs were asked to fill in comprehensive evaluation questionnaires.

In general, participants were quite satisfied with the performance of the further enhanced ODYSSEUS platform tools.

The findings of these evaluations will be used by the technical partners to further enhance the design and functionalities of the ODYSSEUS tools to fully meet the needs of the LEAs.

Following PUC 2, two more PUCs have been planned in the United Kingdom and Romania.



## Other important events

### Joint Workshop of the H2020 projects ODYSSEUS, INHERIT and MELCHIOR

On 12 April 2024, the three H2020 projects ODYSSEUS, INHERIT and MELCHIOR conducted their first trilateral workshop in Athens, Greece.

In this hybrid event, 25 members of the three projects participated online and 28 on-site in Athens. While ODYSSEUS and INHERIT had already conducted a first joint workshop in November 2023, the participation of MELCHIOR was the result of further strong networking activities of the three projects, aiming to identify common objectives and interests, to share the latest project results as well as to identify potential synergies of the three projects.



*Representatives of ODYSSEUS, INHERIT and MELCHIOR in Athens  
(Photo: P. Vasilev)*

In the first presentation of the meeting, Mr. Emmanouil Karavoltsos from the Forensic Science Division of the Hellenic Police provided an overview of the explosives precursors challenges the Hellenic Police is facing as well as the strategies, tools and methods the Hellenic Police applies in this endeavour. The Forensic Science division, which is a full member of the European Network of Forensic Science Institutes (ENFSI) is well equipped for detecting, identifying and analysing explosives precursors.

In their presentations, Mr. Dimitris Skarpalezos (ODYSSEUS), Mr. Hans Önnnerud (INHERIT) and Mr. José Luis Pérez Díaz (MELCHIOR) provide overviews of their respective projects including the general objectives and technical solutions.

Focusing on specific tools for detecting explosives and their precursors, Mr. George Pallis (ODYSSEUS) introduced the T4i Dover Ultra sensor, which is a fast GC-PID chemical detector with a pre-concentrator unit optimized for vapour detection and Mr. Arian van Asten (INHERIT) elaborated about INHERIT's efforts in isotope analysis for the chemical profiling of precursors in the field of pre-blast forensics.



In their concluding remarks, the representatives of the three projects praised the value of sharing information about the goals and results of the three projects and in identifying synergies in the work and interests of the projects.

An aspect of interest to all projects discussed was the volatility of the chemical components of explosives that are easily dispersed in air, which poses a huge challenge in detecting those components. The projects should therefore continue sharing best practices, new ideas and techniques in meeting these challenges.

Another opportunity for this could be another joint workshop in October 2024.





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