



TESTUDO

AUTONOMOUS SWARM OF HETEROGENEOUS RESOURCES
IN INFRASTRUCTURE PROTECTION VIA THREAT PREDICTION AND PREVENTION

Enhancing protection and resilience of European Critical Infrastructures

The EU-funded project TESTUDO aims to revolutionize the protection of European CIs by integrating innovative autonomous systems, advanced technologies and multidisciplinary expertise

The reliable, robust, and resilient operation of Critical Infrastructures is considered more than essential for the security, well-being, and economic growth of European citizens. The CIs should be operated with a sufficient flexibility within a rapidly evolving social-technological and threat environment.

Recent alterations in Europe and beyond its borders have shown the devastating effects of critical infrastructure being destroyed.

The CI operators require innovative technologies that can be adapted to different operational needs and provide the complete tactical picture with decision making support for the effective and coordinated response in hazardous events and large-scale attacks.

The TESTUDO EU Horizon Europe funded project, developed under the coordination of the Centre for Research and Technology Hellas (CERTH) together with 19 European partners, has the aim to develop and demonstrate a novel data-driven and process-oriented surveillance and intelligence platform for increased autonomy and improved situation awareness employing innovative autonomous ground and aerial platforms, state-of-the-art sensors and AI technologies.

The project aims to equip CI operators and other relevant agencies with innovative technologies reinforced with research tools for optimal response, prediction and prevention in case of complex attacks, pandemics or natural and man-made disasters.

Project results will be validated via three large-scale pilot trials covering different scenarios, including disruptive online events in water reservoirs, chemical fire in tunnel provoked by an electric vehicle and synchronized attack on water treatment facilities. The demonstrators will be located in Greece and Spain.

The TESTUDO consortium brings collaboration between an interdisciplinary team of individuals and organizations with an extensive experience in the interdisciplinary research on CI protection and autonomous surveillance to deliver the core objectives of the project. The consortium of 20 partners from 11 European countries consists of 2 CI operators (EYDAP, Interbiak Bizkaia, S.A.), 8 research centres with diverse expertise (CERTH, CENTRIC, CEA, Łukasiewicz-PIAP, VICOMTECH, SINTEF, DFKI, TEKNIKER), 6 SMEs (ACCELIGENCE, Satways, T4i engineering, DRAXIS, Adscensus, DBC Business Consulting), 3 partners from the Large Industry (NTT DATA, Engineering Group, Prosegur) and one NGO (Law and Internet Foundation).

Konstantinos Ioannidis (Deputy Coordinator, CERTH), commented: *TESTUDO aims to deliver a fully functional and validated prototype that will cover diverse operational scenarios in challenging environments for CI protection. The system will provide the capability of operating under any condition performing long-term operations and incorporating technologies to this direction. Autonomy, as the core objective of the project, targets on designing and incorporating capacities that inherently integrate autonomy functionalities using heterogeneous assets including unmanned vehicles and an interoperable network of fixed sensors. The developed platform will allow for the effective and efficient preparedness and prevention of hazardous incidents that may severely impact the smooth operations of Critical*

Infrastructures. To this end, detection and identification through cognition, prevention and coordinated response will complement autonomy functionalities on the unified TESTUDO framework. The consortium adopts an escalated development approach meaning that each prototype will incorporate specific features to conclude to the final TESTUDO prototype which will integrate all functionalities. Every prototype will be validated within the scope of real operational scenarios and under diverse threats. Finally, the TESTUDO consortium is comprised of various beneficiaries with different expertise that can cover different aspects of the project so that we could deliver a fully operational system compliant with all the necessary legal/ethical frameworks.

Kostas Peroulis, (EYDAP, WP10 and UC#1 & UC#3 Leader), said: *EYDAP acknowledges the pressing challenges facing water infrastructure security, and TESTUDO emerges as a crucial initiative in addressing these concerns. As the largest drinking water and sewerage company in Greece, serving over 40% of the population, ensuring the uninterrupted flow of clean drinking water is our top priority. TESTUDO's innovative approach, leveraging cutting-edge technologies like artificial intelligence and cybersecurity, holds immense promise in enhancing the resilience and security of our critical infrastructure. By proactively addressing cyber and physical threats, we anticipate significant improvements in our ability to maintain reliable water services and protect public health. We are committed to collaborating closely with our partners to deliver impactful solutions that benefit our communities and ensure a sustainable future for generations to come.*

Erika Nika (Leader of Dissemination and Exploitation, DBC), stated: *Through strategic dissemination efforts, we aim to amplify the impact of TESTUDO's innovations, ensuring that the advancements made in autonomous systems, advanced technologies, and multidisciplinary expertise reach key stakeholders, policymakers, and the wider public. By fostering greater awareness and understanding of the project's objectives and outcomes, we strive to catalyze meaningful dialogue, drive informed decision-making, and ultimately enhance the security and well-being of European citizens. Moreover, our consortium is committed to maximizing the practical application and commercial potential of our research findings. Through targeted dissemination strategies and engagement with industry partners, we aim to facilitate the uptake of TESTUDO's solutions, fostering innovation.*

TESTUDO has been officially launched on the 1st of October 2023 and it will take 3 years to reach its operational goals.

General information on the project can be found at: www.testudo-project.eu

For more information please contact: contact@testudo-project.eu

Acknowledgements

The TESTUDO project has received funding from the European Commission under the Horizon Europe programme, GA no. 101121258.



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