autonomous swarm of heterogeneous RObots for BORDER surveillance

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This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 700475
beAWARE in H2020

• H2020-EU.3.7. - Secure societies - Protecting freedom and security of Europe and its citizens

• ROBORDER
  – Innovation Action
  – 25 European partners (Portugal, Greece, Germany, Esthonia, Italy, Spain, Belgium, UK, Finland, Hungary, Romania, Bulgaria, Switzerland)
  – Coordinated by TEKEVER II AUTONOMOUS SYSTEMS LDA Portugal
  – Budget ~ 8,99 M€ / EC funding ~ 7,99 M€
  – Expected starting date: May 2017
  – Duration: 3 Years

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beAWARE partners

1 TEKEVER II AUTONOMOUS SYSTEMS LDA Portugal
2 CENTRE FOR RESEARCH AND TECHNOLOGY HELLAS Greece
3 FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V. Germany
4 SISEKAITSEAKADEEMIA Estonia
5 Teknologian tutkimuskeskus VTT Oy Finland
6 everis Spain SLU, Succursale en Belgique Belgium
7 Police Service of Northern Ireland United Kingdom
8 MINISTERIO DA ADMINISTRACAO INTERNA Portugal
9 NATO SCIENCE AND TECHNOLOGY ORGANISATION Belgium
10 ORSZAGOS RENDOR - FOKAPITANYSAG Hungary
11 ROBOTNIK AUTOMATION SLL Spain
12 SERVICIUL DE PROTECTIE SI PAZA Romania
13 ELETTRONICA GMBH Germany
14 MINISTRY OF NATIONAL DEFENCE, GREECE Greece
15 SHEFFIELD HALLAM UNIVERSITY United Kingdom
16 AUTORITA PORTUALE LIVORNO Italy
17 OCEANSCAN - MARINE SYSTEMS & TECHNOLOGY LDA Portugal
18 INSTITUT PO OTBRANA Bulgaria
19 Copting GmbH Germany
20 ETHNIKO KAI KAPODISTRIAKO PANEPISTIMIO ATHINON Greece
21 CSEM CENTRE SUISSE D'ÉLECTRONIQUE ET DE MICROTECHNIQUE SA - RECHERCHE ET DEVELOPPEMENT Switzerland
22 CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE TELECOMUNICAZIONI Italy
23 Ministério da Justiça Portugal
24 CAPRITECH LIMITED United Kingdom
25 INSPECTORATUL GENERAL AL POLITIEI DE FRONTIERA Romania

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Border authorities and Law Enforcement Agencies (LEAs) across Europe face important challenges in how they patrol and protect the borders.

- Heterogeneity of threats, the wideness of the surveyed area, the adverse weather conditions and the wide range of terrains.
- Nowadays border authorities do not have access to an intelligent holistic solution providing all aforementioned functionalities.

ROBORDER aims at developing a fully-functional autonomous border surveillance system with unmanned mobile robots including aerial, water surface, underwater and ground vehicles, capable of functioning both as standalone and in swarms, which will incorporate multimodal.

- The system will be equipped with adaptable sensing and robotic technologies that can operate in a wide range of operational and environmental settings.
- To provide a complete and detailed situational awareness picture that supports highly efficient operations, the network of sensors will include static networked sensors such as border surveillance radars, as well as mobile sensors.
- Detection capabilities for early identification of criminal activities and hazardous incidents will be developed.
- This information will be forwarded to the command and control unit that will enable the integration of large volumes of heterogeneous sensor data and the provision of a quick overview of the situation at a glance to the operators, supporting them in their decisions.
Maritime surveillance scenario

- Coastal radar network
- Large fixed wing UAVs with on-board sensors: high quality/long range optical and thermal cameras, passive radar, RF comms sensor and optionally others such as LiDAR
- USVs with on-board sensors: optical and thermal cameras, passive radar, RF comms sensor and optionally other payloads
- UUV with on-board sensors: sonar and optionally other payloads

Land border protection scenario

- Fixed radar network
- Large fixed wing UAVs flying at high altitude to provide a general situational awareness, with on-board sensors
- Small fixed-wing UAV flying at medium to low altitude, providing a closer view of the situation
- Small multi-copter UAV flying at low altitude, keeping a close eye on the target.
- UGVs with on-board sensors: optical and thermal cameras, RF comms sensor and optionally other payloads.
- Small tethered multi-copter UAV operating in cooperation with a carrier UGV.
Thank you!

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