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MOSTRA DOS
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EUROPEUS

Project pitching

Green Innovation and Decarbonisation

ROMOVI: Modular and Cooperative Robot for Hillside Vineyards

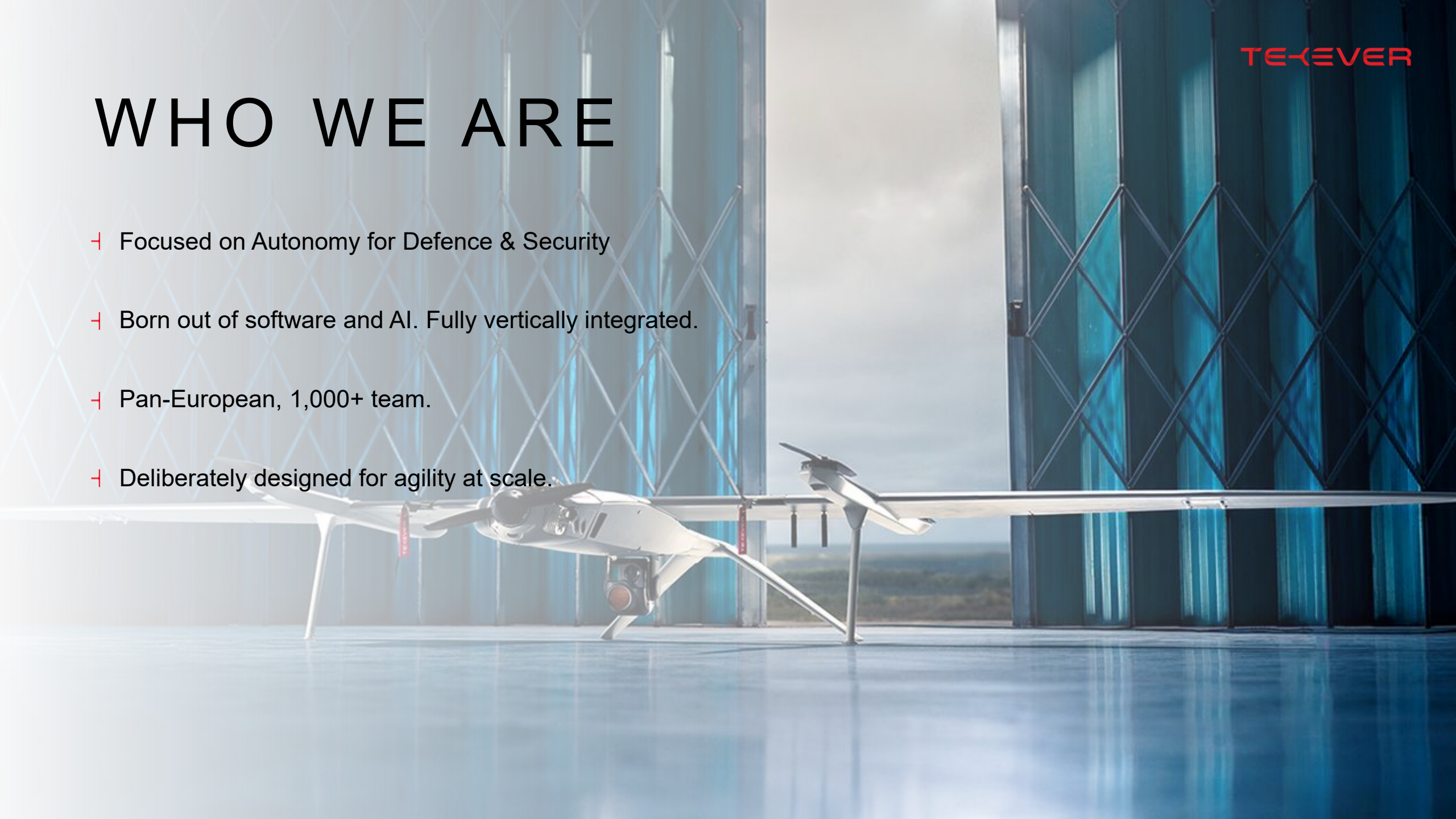
António Relvas and Rui Santos

Green Innovation and Decarbonisation

TEKEVER

WHO WE ARE

- Focused on Autonomy for Defence & Security
- Born out of software and AI. Fully vertically integrated.
- Pan-European, 1,000+ team.
- Deliberately designed for agility at scale.

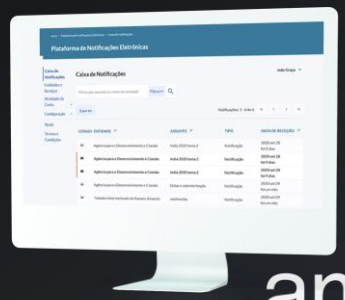


TEKEVER

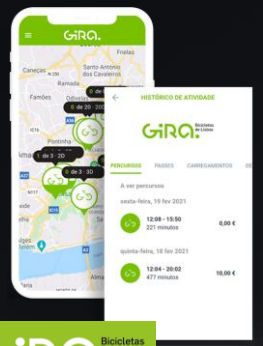
TEKEVER DIGITAL

Besides building the next generation of UAS,
we're helping to digitally transform the country,
helping Portuguese companies and institutions to thrive.

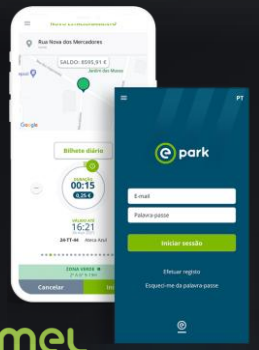
aicep Portugal Global



ama AGÊNCIA PARA A MODERNIZAÇÃO ADMINISTRATIVA



GIRA Bicicletas de Lisboa



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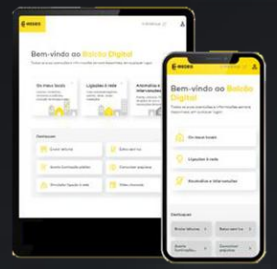
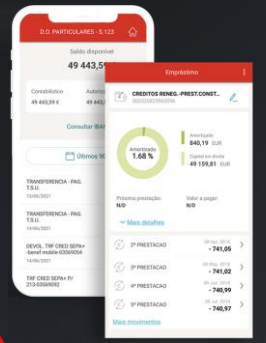


E-REDES



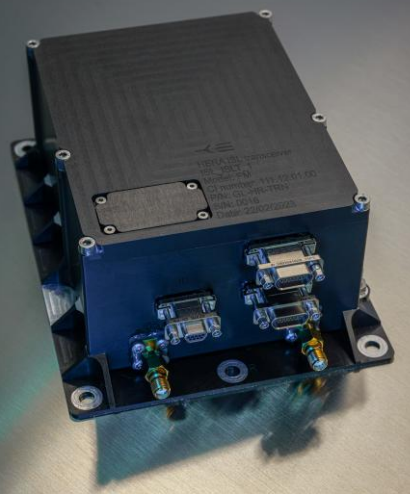
Santander

edp

TEKEVER SPAC

We're leading the Portuguese Space Industry
Into the new space age, focusing on developing
next generation technologies and missions

TEKEVER



GAMASAR

esa

TEKEVER

- European leader in autonomous aerial systems
- Key references in service delivery (maritime surveillance): EMSA, UK Home Office
- Supplier of equipment (Ukraine, PNE, GNR, Portuguese Navy, RAF, etc.)
- Investors with a long-term vision: Baillie Gifford, NATO Innovation Fund
- Triple advantage: technology, operational experience, financial strength

Baltic – EMSA
2025

Ukraine
2022 – ongoing

UK Home Office
2019 - ongoing

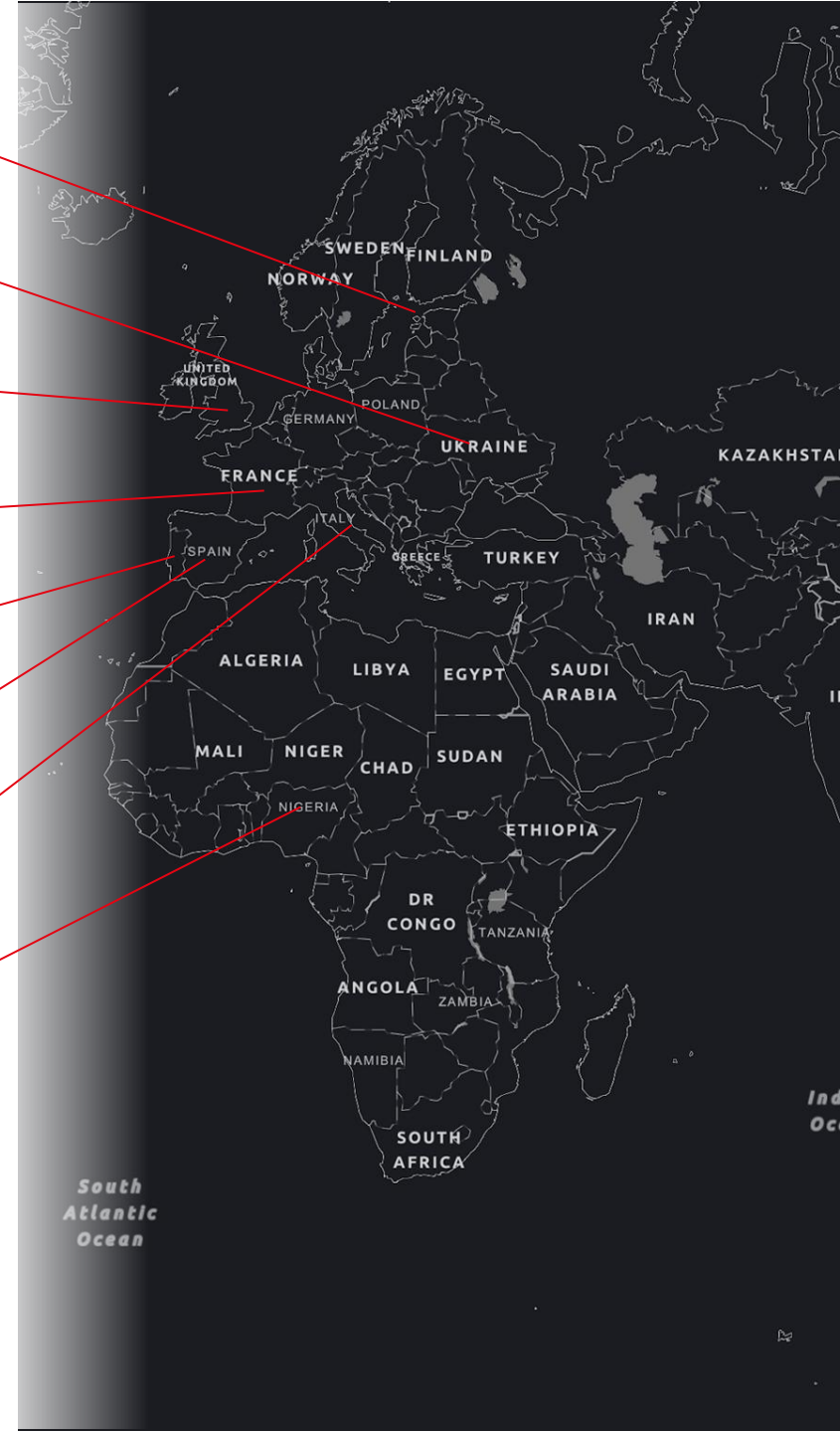
France – EMSA
2020 - 2024

Portugal - EMSA
2017-2018 - 2025

Spain – EMSA
2018 – 2019 - 2025

Italy – EMSA
2019 – 2025

Nigeria – Oil & Gas
2022 – ongoing



TEKEVER

AR5

SECURING YOUR BORDERS AND OCEANS

Proven surveillance UAS

- Wide Area Surveillance
- Maritime Surveillance
- Pollution Monitoring
- Fisheries Inspection
- Communications Relay

Dimensions	**7.3m x 4.0m**	Payload	**50 kg**
Cruise Speed	**100 km/h**	Endurance	**12h-20h Depending on Payload**
Comms Range	**>150 km (Optional SatCom)**	Launch	**Unprepared Airstrip**
MTOW	**180kg**	Recovery	**Unprepared Airstrip**

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AR3

An easily deployable capability extender for maritime and land operations.

- Wide Area Surveillance
- Maritime Surveillance
- Pollution Monitoring
- Fisheries Inspection
- Communications Relay

Dimensions	**4.2 m (W) x 1.96 m (L)**	Payload	**6kg**
Cruise Speed	**46 knots**	System Endurance	**22 hours (14 with VTOL)**
Comms Range	**Up to 230 km**	Launch	**Catapult or VTOL**
MTOW	**25kg**	Recovery	**Parachute / Belly / Water / VTOL**

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ANTÓNIO RELVAS / RUI SANTOS

Green Innovation and Decarbonisation

ROMOVI

ROBOT MODULAR E COOPERATIVO
PARA VINHAS DE ENCOSTA

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ROMOVI
ROBOT MODULAR E COOPERATIVO
PARA VINHAS DE ENCOSTA

OVERALL OBJECTIVES

The main objective of the ROMOVI project was to develop robotic components and a modular, scalable mobile platform that could, in the future, support commercial solutions for hillside vineyards capable of autonomously performing operations such as monitoring, logistics, selective harvesting, grass cover management, spraying and fertilisation, as well as weeding, pruning, shoot trimming and pre-pruning.

A low-cost, highly modular and versatile platform was developed, capable of integrating a wide range of payloads, including both sensors and actuators. The potential applications are diverse and, by the end of the project, the prototype had demonstrated its monitoring and logistics capabilities.

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CHALLENGES

The main technical challenge of the ROMOVI project lies in the steep slopes of these vineyards, which obstruct GPS satellite signals, preventing their use for several hours a day and requiring highly stable mechanical structures.

The ROMOVI project therefore aims to develop image-guided navigation strategies, specific trajectory generation methods and a robust structure with a low centre of mass. In addition, given the highly stony terrain, the platform will be capable of passively overcoming obstacles.

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INNOVATION

ROMOVI
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PARA VINHAS DE ENCOSTA

Reliable and robust high-precision localisation system, tolerant to the absence/failure of GPS in the context of hillside vineyards

Global localisation system based on active RF markers, increasing redundancy and enabling long-distance communication of critical data

Trajectory planning and obstacle avoidance solution that considers the robot's centre of mass and the slope of the terrain

Modular mechanical robotic solution for monitoring and logistics operations in hillside vineyards

Cost-effective and modular vineyard perception system

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ROMOVI
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USE CASES

- **Monitoring of water stress in a single-row terraced vineyard**
- Canopy management operations (e.g. lifting trellis wires);
- Pre-pruning or pruning;
- Removal of vines from within the vineyard;
- Transport of organic matter for fertilisation to the vine row;
- Blower system to reduce leaf wetness duration;
- Reduction of the physical effort required from labour in general (transport of materials required for operations, water, etc.)

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CONCLUSIONS

Development of the platform's navigation and localisation system

Development of traction systems

Development of autonomous systems

Real-time obstacle detection

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ROMOVI

ANTÓNIO RELVAS / RUI SANTOS

3 December 2025
Coimbra

https://www.tekever.com/projects/romovi/

NORTE 2030 PAT Programa Assistência Técnica 2030 PORTUGAL 2030 Cofinanciado pela União Europeia
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