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ACCELERATE

AdvanCing UAVs teChnology to Enable monitoRing for A susTainable enviromEnt

Welcome to the 3rd volume of the ACCELERATE project Newsletter series

CONTENTS

ABOUT

ACCELARATE is a 48-month research project dedicated to advancing the role of Unmanned Aerial Vehicles (UAVs) in fostering environmental sustainability. In an era where climate change poses escalating threats to ecosystems, societies, and cultural heritage, ACCELARATE seeks to unlock the full potential of UAV-based monitoring systems as precise, flexible, and scalable tools for environmental observation.

CONTACT US

Funded by the European Union

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON EUROPE RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT NO. 101182930

CONFERENCE PRESENTATION

Litter detection and mapping from the combined use of multispectral UAV imagery and deep learning: A case study from Greece

LITTER DETECTION AND MAPPING FROM THE COMBINED USE OF MULTISPECTRAL UAV IMAGERY AND DEEP LEARNING: A CASE STUDY FROM GREECE

Christina Mitsopoulou[1], George P. Petropoulos[1], Spyridon E. Detsikas[1], Christina Lekka[1], Konstantinos Grigoriadis[2], Vassilios Polychronos[2], Elisavet-Maria Mamagiannou[2], Christos Gkotsikas[2], Konstantinos Chardavellas[3], and Evina Katsou[4]

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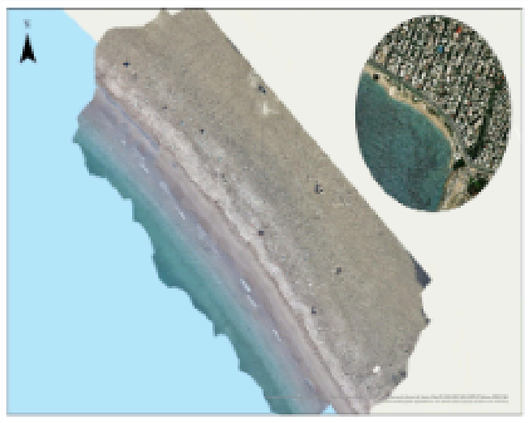
1. Introduction

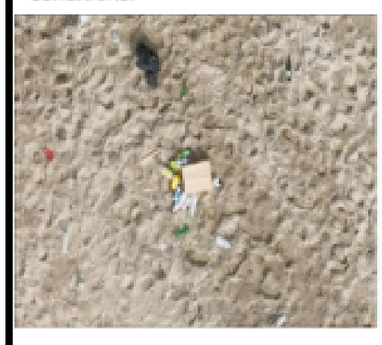
- **Litter pollution** has grown to be the most prominent threat to the coastal ecosystems, affecting both the environment and the local communities. It is important to have the ability to track an mitigate beach litter in order to battle the issue
- The aim of this study is to examine the accuracy of two **Deep Learning (DL)** models that are build-in within the **ArcGIS Pro** software in detecting and mapping beach litter.
- For the detection of the litter two models were tested, the **Mask R-CNN** and the **YOLOv3**, which are both very prominent models in object detection studies. For the training of the models, **UAV multispectral imagery** was used.

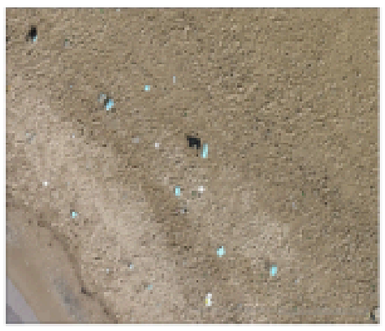
2. Experimental Set-up



- Field campaign took place on the 22 of October 2025, in the coast of Batis, in Palio Faliro, Greece.
- The DJI Matrice 300 was used as the UAV platform. Controlled flight campaigns were conducted at multiple altitudes (30 m, 60 m, and 100 m).
- In this study, only the dataset acquired at 30 m altitude was used for the analysis.

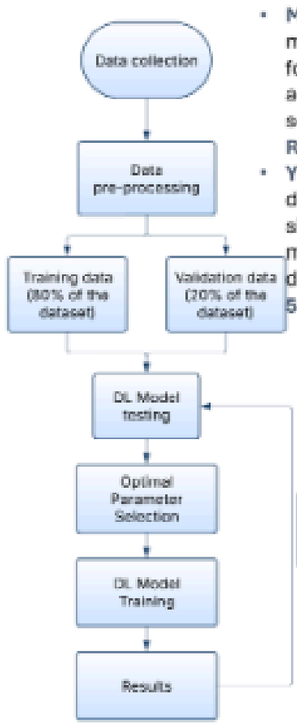
In the first phase of the experiment, flights were conducted over the beach under natural (pre-disturbance) conditions, without any litter present. Following this initial dataset acquisition, different types of litter (e.g., glass bottles, plastic bags, and paper cups) were then distributed along the coastline, and a second set of flights was performed under these modified conditions.





3. Methodological Approach

i. Data preparation and DL model training



Deep Learning models:

- **Mask R-CNN:** A state-of-the-art region-based model of the Faster R-CNN family, which is used for object detection. Mask R-CNN has an additional branch for predicting image segmentation. (ESRI Developer). Uses the **ResNet** architecture.
- **YOLOv3:** Part of the YOLO series for object detection. It's a single shot model, making it significantly faster than other models, but still matching the accuracy of region-based detectors. (ESRI Developer). Uses the **DarkNet-53** architecture.

ii. Validation assessment

The validation process was based on three main variables, **Precision, Recall and F1.**

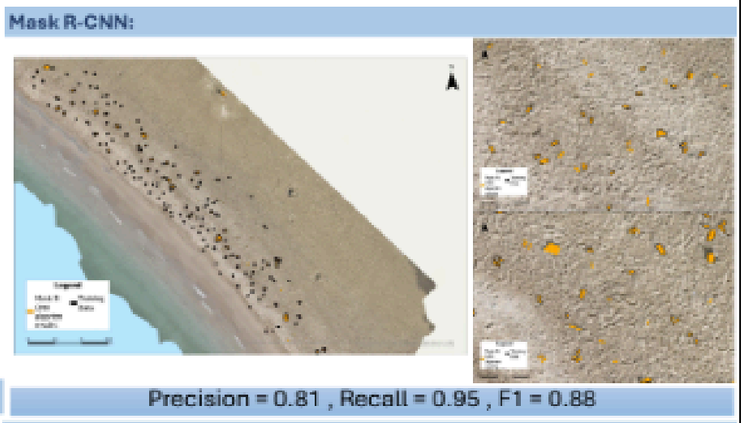
$$\text{Precision} = \frac{True\ positive}{True\ Positive\ +\ False\ Negative} \times 100$$

$$\text{Recall} = \frac{True\ Positive}{True\ Positive + False\ Positive} 100$$

$$\text{F1 Score} = \frac{2 * Precision * Recall}{Precision + Recall} \times 100$$

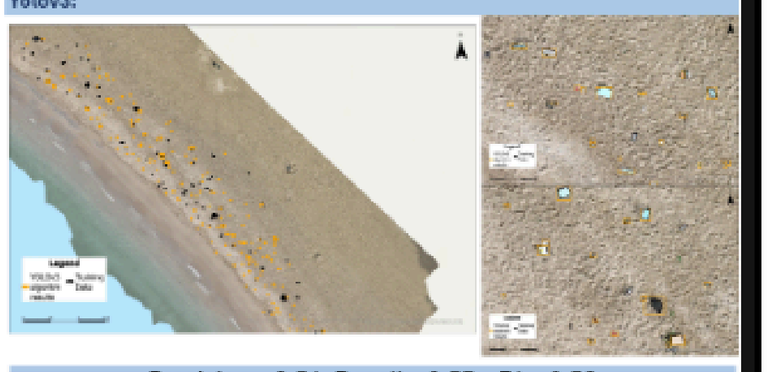
4. Results

Mask R-CNN:



Precision = 0.81 , Recall = 0.95 , F1 = 0.88

Yolov3:



Precision = 0.51, Recall = 0.55 , F1 = 0.53

5. Concluding Remarks

- Results show clear performance differences between detection models. YOLO approaches perform well under optimal conditions, especially at low altitudes, with YOLOv8 achieving very high accuracy (>0.9) (Duangsuwan & Prapruetdee, 2024), while YOLOv5 shows moderate performance (AP = 0.69) (Pfeiffer et al., 2023), indicating sensitivity to scene complexity.
- Mask R-CNN demonstrates more robust and stable performance in complex environments, significantly outperforming YOLOv3 (F1 = 0.88 vs. 0.53; Precision = 0.81, Recall = 0.95 vs. Precision = 0.51, Recall = 0.55) (Scarrica et al., 2022), and better handling underrepresented classes. Both models can also generalize to unseen objects.
- However, performance is affected by shadows, flight altitude, and complex backgrounds (e.g., footprints), while buried, overlapping, and occluded items remain challenging.
- Overall, results suggest that model effectiveness depends strongly on data quality and acquisition conditions, highlighting the need for large, diverse, and well-annotated training datasets and improved UAV data collection strategies.

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- **We would like to thank GeoSense Pco for providing the dataset used in this study**

For more information about ACCELERATE MSCA SE program, please visit:
https://www.linkedin.com/in/accelerate-msca-project-0a99a9345/
https://accelerate-msca.eu/

Funded by the European Union | ACCELERATE | Harokopio University Geography Department | IMPERIAL | GeoSense | PRASINOR

This study is financially supported by the ACCELERATE MSCA SE program of the European Union's Horizon research and innovation program under grant agreement No. 101182930

Christina Mitsopoulou[1], George P. Petropoulos[1], Spyridon E. Detsikas[1], Christina Lekka[1], Konstantinos Grigoriadis[2], Vassilios Polychronos[2], Elisavet-Maria Mamagiannou[2], Christos Gkotsikas[2], Konstantinos Chardavellas[3], and Evina Katsou[4] (2026).

Litter detection and mapping from the combined use of multispectral UAV imagery and deeplearning: A case study from Greece.

Presented in Session: "AI and UAV Applications for Environmental Monitoring".

1) This study, conducted within the ACCELERATE project, investigates the use of multispectral UAV imagery combined with deep learning-based object detection and segmentation models for coastal litter detection and mapping in Greece. The research evaluates the performance of advanced deep learning architectures, including Mask R-CNN and YOLOv3, for identifying plastic waste under complex environmental conditions.

2) The work contributes to the growing body of research on AI-enabled environmental monitoring and demonstrates the strong potential of UAV-based remote sensing for scalable, high-resolution coastal waste assessment. The findings highlight how integrated UAV and AI methodologies can support more efficient and accurate monitoring strategies for sustainable coastal management and environmental protection.

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AdvanCing UAVs teChnology to EnabLE monitoRing for A susTainable environmEnt

CONFERENCE PRESENTATION

Detecting vineyards using multispectral UAV imagery and artificial intelligence: A case study from Northern Greece

1) Introduction

UAV imagery provides:
- high spatial resolution
- flexible data acquisition

+

Deep learning (DL) approaches can achieve high performance in vine detection tasks

↓

Accurate vineyard segmentation is essential in Precision Viticulture (Ferro et al., 2024)

→

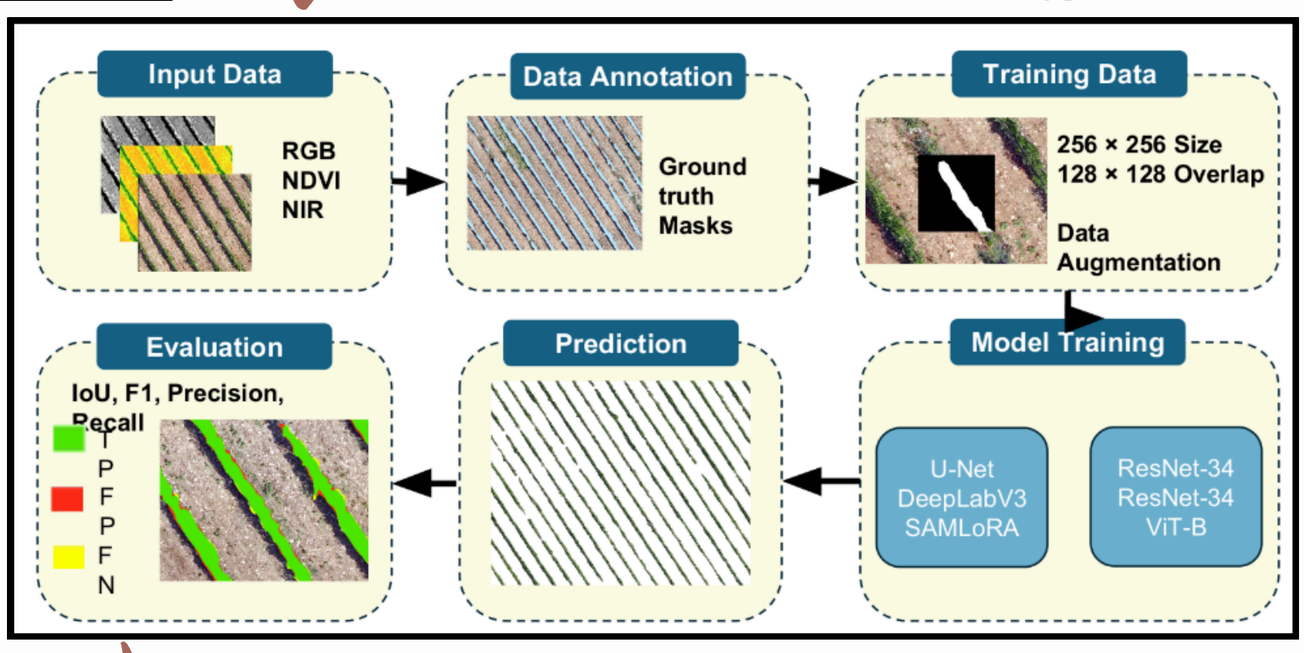
- plant health assessment
- yield estimation
- decision support

Three different input data types (RGB, NDVI, NIR) were selected to examine how spectral information influences segmentation performance.

ArcGIS Pro (Version 3.6.0) was used for the implementation of the models and the evaluation of the experimental analysis

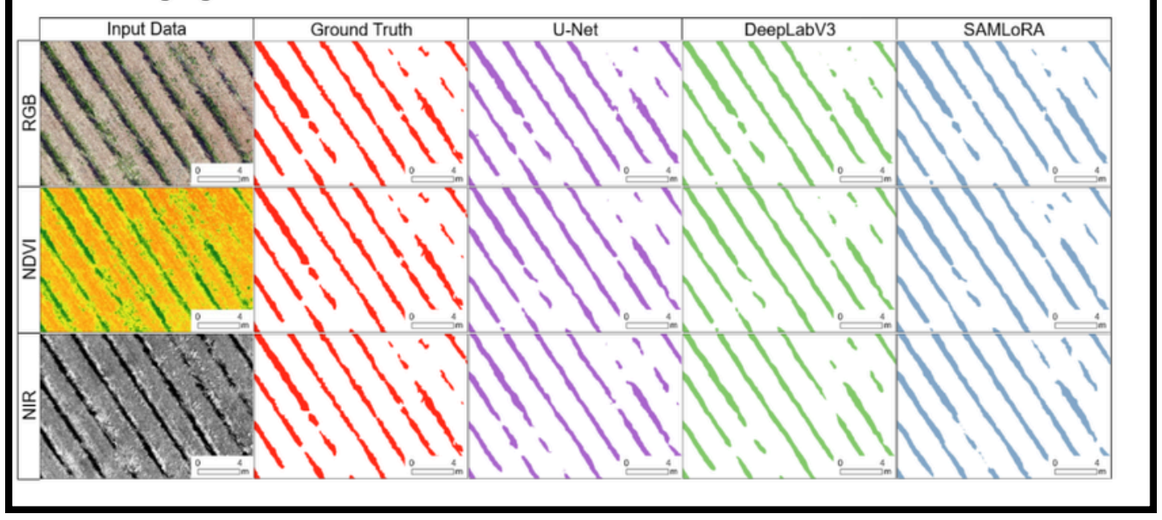
- All models were trained for a maximumof 30 epochs, with early stopping to prevent overfitting
- ResNet-34 backbone was used forU-Net and DeepLabV3 and ViT-B for SAMLoRA

2) Methodology Flowchart



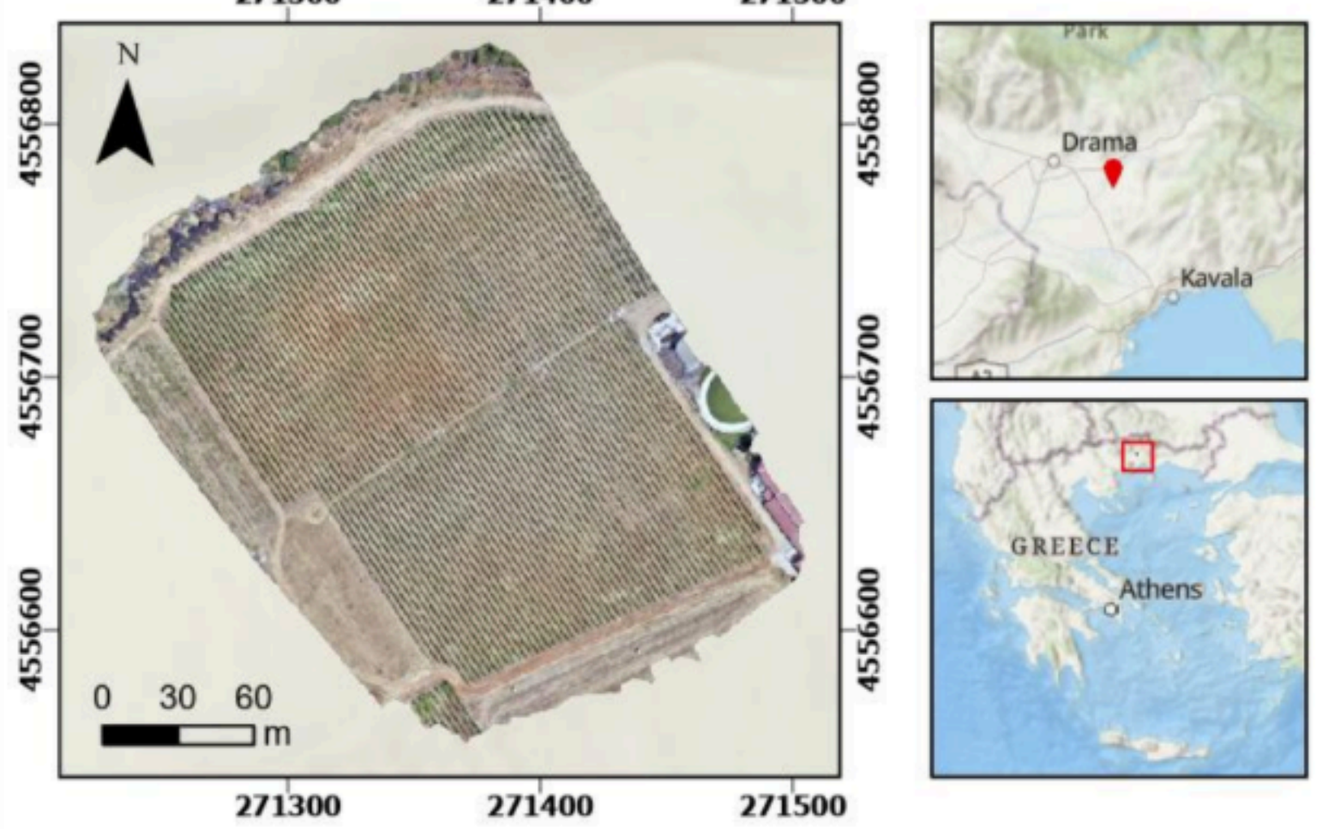
3) Results: Vine Segmentation

❑ Models performed similarly in simple areas, but differences occur under challenging conditions



Asimakopoulos, C., Petropoulos, G.P., Saitis, G., Detsikas, S.E., Evelpidou, N., Grigoriadis, K., Polychronos, V. Mamagiannou, E.-M., & Litke, A. Detecting vineyards using multispectral UAV imagery and artificial intelligence: A case study from Northern Greece

Key Highlight: The presented methodology showcases the potential of UAV-based AI systems for automated vineyard monitoring, supporting more efficient and sustainable viticulture practices.



Study Area

This presentation showcased recent ACCELERATE research on vineyard detection using multispectral UAV imagery and artificial intelligence techniques in Northern Greece. The results highlight the potential of UAV-based AI systems for improving precision agriculture and sustainable vineyard monitoring.

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CONFERENCE PRESENTATION

Assessing the effect of different ground sampling distances for drone-based mapping of fractional cover: a case study from a vineyard field in Northern Greece

Assessing the effect of different ground sampling distances for drone-based mapping of fractional cover: a case study from a vineyard field in Northern Greece

Georgios-Nektarios Tselos [1], Spyridon E. Detsikas [1], George P. Petropoulos [1], Vassilios Polychronos [2], Konstantinos Grigoriadis [2], Elisavet-Maria Mamagiannou [2], Dimitrios Ramnalis [2] Konstantinos Grigoriadis [2], and Petros Masouridis [3]

[1]Department of Geography Harokopio University of Athens, Athens, Greece [2]GeoSense PCo., Thessaloniki, Greece
[3]WALTR, Department of Innovation & Product development, Ramonville-Saint-Agne, France

1.Introduction

- **Fractional vegetation cover (FVC)** and bare soil fractions are key biophysical indicators for monitoring crop condition, soil degradation, and precision viticulture management. [1]
- In **vineyard environments**, conventional satellite imagery is often constrained by mixed pixels and moderate spatial resolution, limiting the detection of within-field canopy variability and inter-row soil exposure. [2]
- **UAV multispectral imagery** provides centimeter-level spatial detail; however, evaluating the influence of **ground sampling distance (GSD)** is essential for robust and accurate **FVC** estimation. [3]

2.Experimental Set-up

UAV imagery acquired over a commercial vineyard (Ktima Lazaridi) in northern Greece
- 4.94 hectares
- Sauvignon Blanc vines

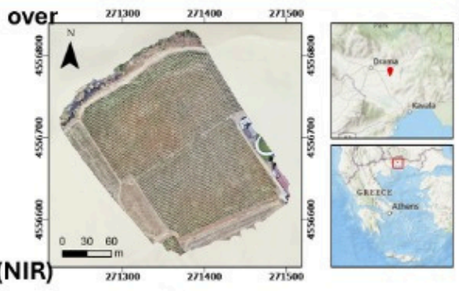


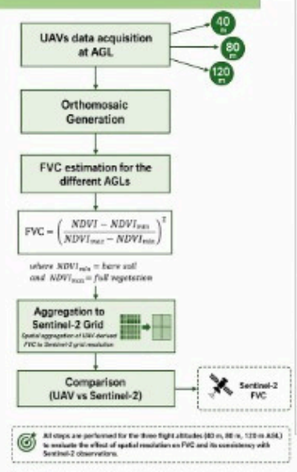
Figure 1: Position of Study Area

RGB and Multispectral (NIR)
- 40 meters Above Ground Level (AGL)
- Acquisition: 30 July 2025

3.Methodology

UAV imagery was acquired over vineyards at three flight altitudes (**40, 80, and 120 m AGL)** to investigate the effect of spatial resolution on vegetation analysis. The acquired images were processed into orthomosaics, followed by **NDVI** calculation and **FVC** estimation using an NDVI-based approach with bare soil and full vegetation reference values. [4]

For comparison with satellite observations, **UAV-derived FVC** products were spatially aggregated to the **Sentinel-2** grid resolution. The resulting datasets were then evaluated across flight altitudes and against **Sentinel-2 FVC** observations. [5]



4.Results

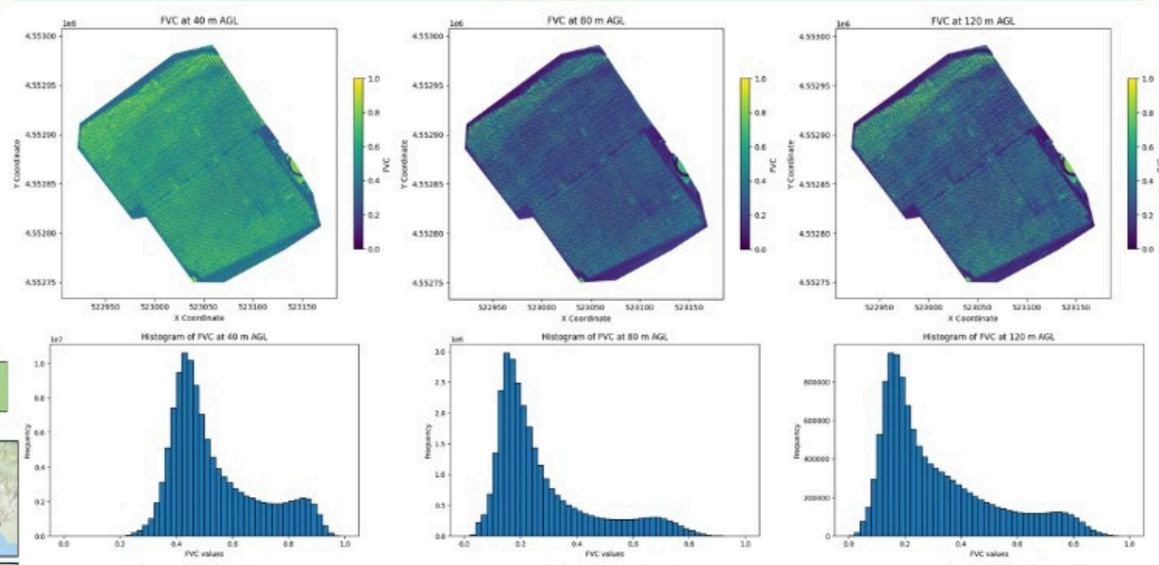
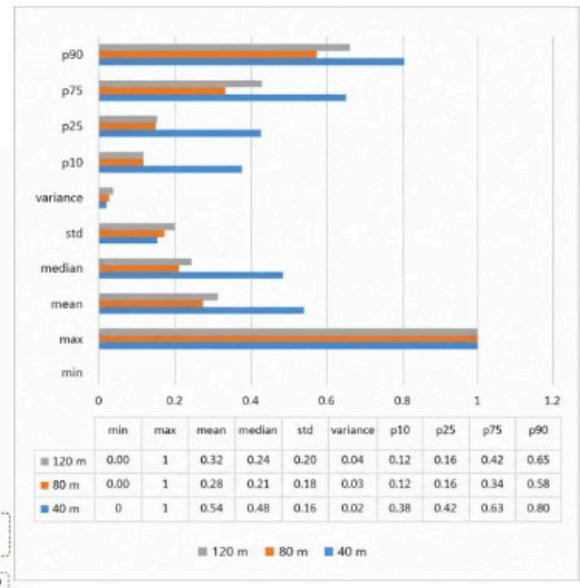


Figure 2: FVC at 40 m

Figure 3: FVC at 80 m

Figure 3: FVC at 120 m

- FVC variability is highest at 40 m, indicating increased sensitivity to within-field canopy structure.
- Aggregation to coarser resolutions (80 m, 120 m) reduces variability and leads to more uniform FVC estimates, masking fine-scale spatial patterns.



	min	max	mean	median	std	variance	p10	p25	p75	p90
120 m	0.00	1	0.32	0.24	0.20	0.04	0.12	0.16	0.42	0.65
80 m	0.00	1	0.28	0.21	0.18	0.03	0.12	0.16	0.34	0.58
40 m	0	1	0.54	0.48	0.16	0.02	0.38	0.42	0.63	0.80

120 m 80 m 40 m

Table 1: Results of Aggregation

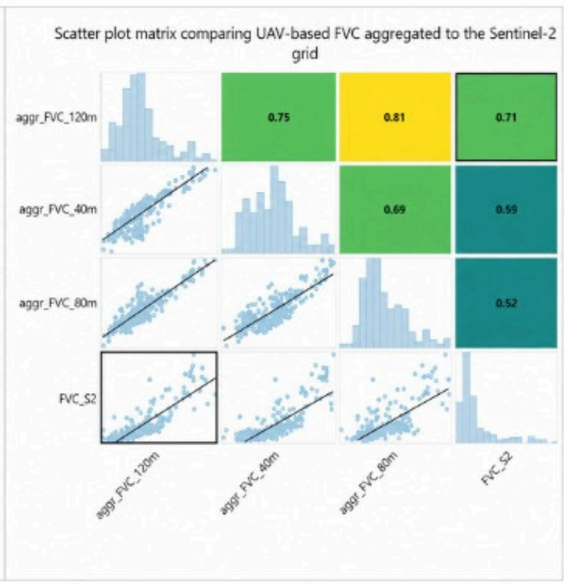


Figure 4: Scatter plot UAV/Sentinel-2 aggregated

5.Final Remarks

FVC maps show a clear dependence on flight altitude. **At 40 m AGL**, higher spatial resolution captures vineyard structure more effectively, resulting in higher and more variable FVC **(mean ≈ 0.54), while 80–120 m** produce smoother maps with lower values **(mean ≈ 0.28–0.32).**

This pattern is supported by statistical metrics and indicates that increasing altitude reduces canopy detail and leads to more conservative **FVC** estimates. **Sentinel-2** captures consistent large-scale patterns but underrepresents fine-scale variability, highlighting a trade-off between spatial detail **(UAV)** and consistency **(satellite).** Scale differences may introduce uncertainty when comparing UAV and satellite **FVC**. [1]

Sentinel-2 FVC provides stable large-scale estimates but underrepresents fine-scale variability due to its coarser resolution, highlighting a trade-off between spatial detail **(UAV)** and consistency **(satellite)**. Scale differences and aggregation may introduce uncertainty when comparing **UAV and satellite FVC**. [5]

*The authors would also like to warmly thank GeoSense PCo for providing the UAV data.

6.References

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Project Information Resources

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Recent research on UAV-based vineyard monitoring in Northern Greece, exploring how different ground sampling distances influence fractional vegetation cover (FVC) mapping. By comparing ultra-high-resolution drone imagery with Sentinel-2 satellite observations, the study highlights the trade-off between spatial detail and large-scale consistency in precision viticulture applications.

Key Highlight: UAV multispectral imagery enables highly detailed vegetation monitoring beyond the spatial capabilities of satellite observations.

The results demonstrate the strong potential of multispectral UAV data for capturing fine-scale canopy variability and supporting more accurate agricultural monitoring workflows.

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CONFERENCE PRESENTATION

GIS AUA 2026

Geographical Information Systems Research Unit | AGRICULTURAL UNIVERSITY OF ATHENS

Where

Conference Center of Agricultural University of Athens

When

19-21 May, 2026
Tuesday to Thursday

Geographical Information Systems (GIS) are transforming modern agriculture and environmental sustainability in Greece. Using technologies such as UAV drones, digital cameras, and IoT, GIS supports smarter decision-making and efficient solutions. Since 2015, the GIS Research Unit at the Agricultural University of Athens, in collaboration with Hellas GIs, has contributed through research projects, workshops, and the MSc program "Geoinformatics and Spatial Analysis."

Towards the FAIR and Effective Use of UAV Data for Sustainable Environmental Monitoring: The contribution of the ACCELERATE Project

Petropoulos G. P.[1], Detsikas S. E.[1*], Polychronaki M. [1], Tselos G.-N.[1], Drakopoulos F. [1], Asimakopoulos C. [1], Masouridis P.,[2] Petkowski M.[3], Nikushev D.[3], Grigoriadis K. [4], Katsou E.[5], Litke A. [6]

[1] Department of Geography, Harokopio University of Athens, Greece [2] WALTR, France [3] AG Futura Technologii DOOEL, N. Macedonia[4] GeoSense PCo., Greece [5] Imperial College London, United Kingdom, [6] Innov-Acts LTD, Cyprus

1.ACCELERATE Project

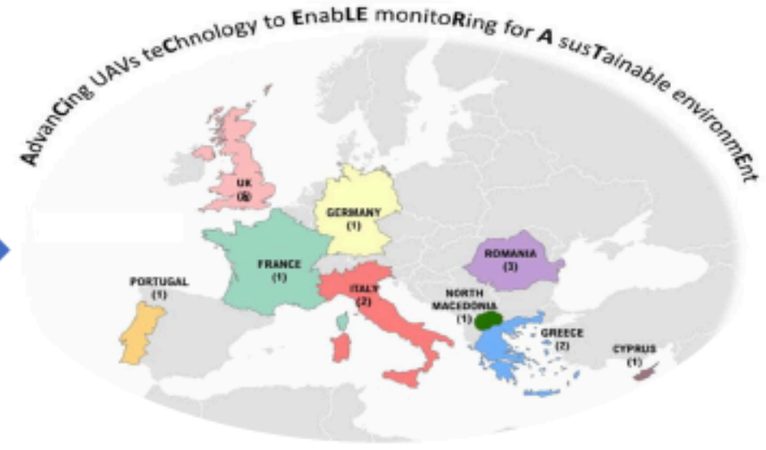
Background and Motivation

- ✓ **Environmental sustainability is** recognized as an urgent challenge due to its direct impact on humanity at both global and local scales.[1]
- ✓ **Unmanned Aerial Vehicle (UAV)** monitoring systems provide a solution for cost-effective, accurate, and multi-angle data collection with flexible capabilities.[2,3]
- ✓ **European Commission** through **Drone Strategy 2.0,** aims to integrate UAVs into sustainability assessments by 2030 to ensure a smart and efficient framework.[2,3]

Project Summary

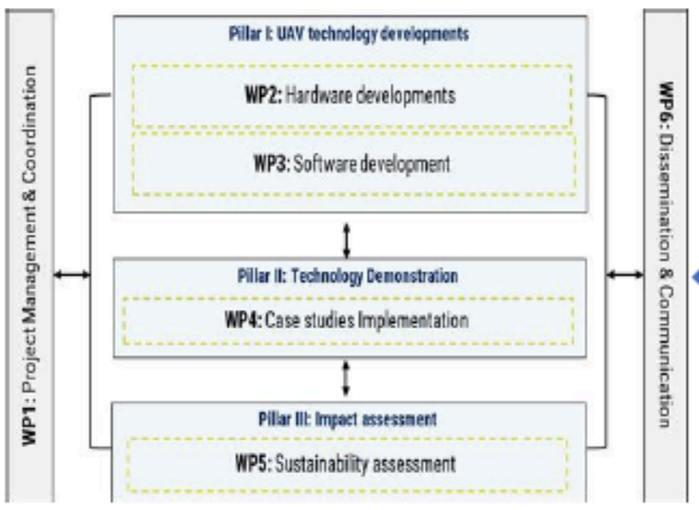
- ✓ a **4-year** (2025-2028) **Marie Sklodowska-Curie Actions** staff exchanges project funded by the EU,
- ✓ brings together staff from **academia** and **industry** carefully-designed **secondments**, establishing a collaborative research and innovation environment,
- ✓ seeks to address **existing challenges** in UAV technology to promote **innovation** in research and analysis for **urban, agricultural, coastal, and cultural** environments.

ACCELERATE's Consortium

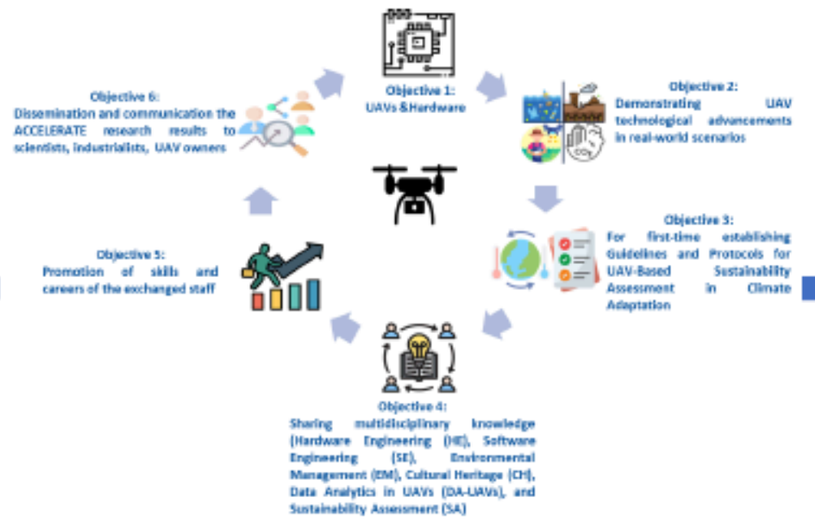


ACCELERATE's Consortium *consisting of* **16 partners** from **9 different countries** covering different disciplines.

Work Packages Structure



Main Objectives



Project's Use Cases

Coastline Litter Pollution
UAVs assess coastal litter with RGB/NIR/Thermal sensors and AI models (RF, SVM, CNN). Challenges include remote access and BVLOS integration.

Crop Monitoring & Health
Use UAVs for crop detection and health assessment with ML/DL, sensor calibration, and open-source visual tools for scalable agriculture analytics.

Cultural Heritage Monitoring
UAVs create 2D/3D maps of archaeological sites and support ML/DL for feature recognition. Overcome hardware and data limitations in heritage research.

Urban Air Quality
Monitor PMs, RH, and temperature using UAVs with low-cost sensors and DL models (CNN, LSTM) to detect pollution patterns and sources.

Petropoulos G. P.[1], Detsikas S. E.[1], Polychronaki M.[1], Tselos G.-N.[1], Drakopoulos F.[1], Asimakopoulos C.[1], MasouridisP.[2], Petkowski M.[3], Nikushev D.[3], Grigoriadis K.[4], Katsou E.[5], Litke A.[6]

The ACCELERATE Project promotes the FAIR and effective use of UAV data for sustainable environmental monitoring. Bringing together academic and industry partners across Europe, the project focuses on advancing UAV technologies, research collaboration, and innovative applications in agriculture, climate adaptation, air quality, and environmental sustainability.

NEXT

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ACCELERATE
AdvanCing UAVs teChnology to EnabLE monitoRing for A susTainable environmEnt

CONFERENCE PRESENTATION

ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
AGRICULTURAL UNIVERSITY OF ATHENS

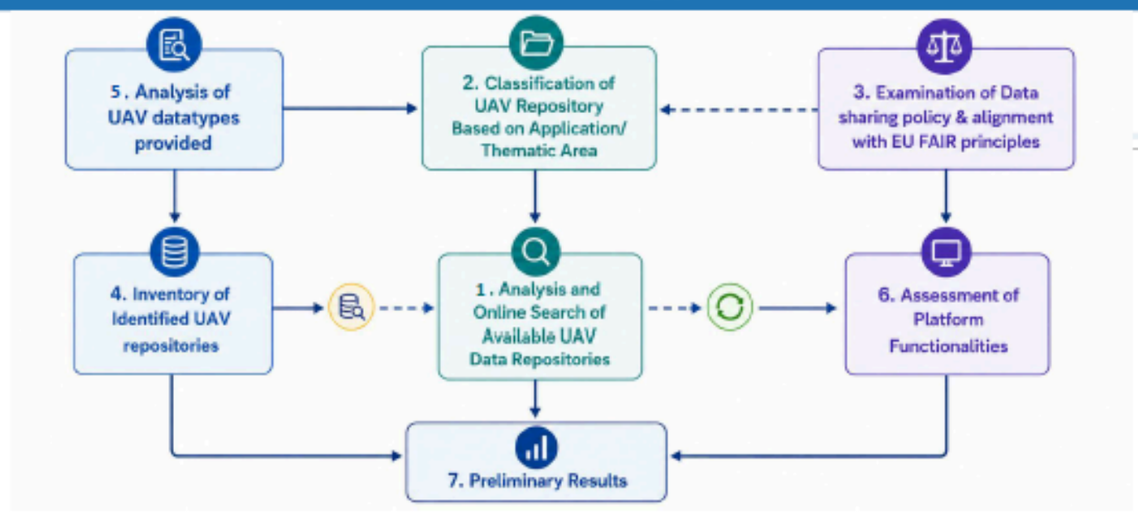
GIS AUA 2026

Towards the FAIR and Effective Use of UAV Data for Sustainable Environmental Monitoring

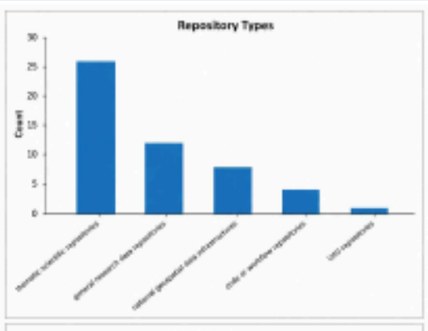
2.Study Objectives

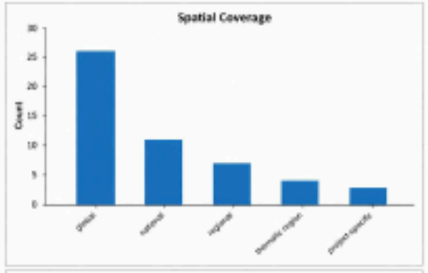
- ❑ **To identify and analyze** the current landscape of UAV data repositories with respect to their structure, accessibility, and data-sharing practices.
- ❑ **To classify the identified UAV repositories** according to thematic application domains (e.g., environmental monitoring, precision agriculture, cultural heritage, coastal monitoring) and evaluate the dominant areas of use.
- ❑ **To investigate the types of UAV-derived** datasets commonly shared within repositories, including orthomosaics, terrain products, multispectral imagery, thermal data, LiDAR, and other advanced products.
- ❑ **To identify existing gaps, inconsistencies,** and challenges in UAV data governance, standardization, and repository harmonization across platforms.
- ❑ **To provide recommendations for improving** UAV repository interoperability, data-sharing practices, and long-term reusability of UAV-derived datasets.

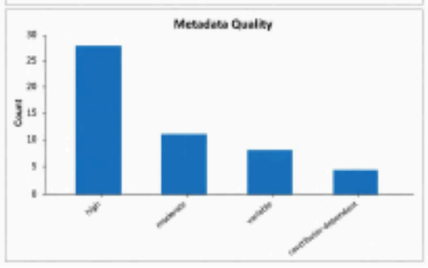
3.Methodology



4.Results







- Our analysis indicated **51 repositories existing.**
- **26 scientific thematic platforms** and **12 general research databases.**
- **26** platforms provide data on a **global scale.**
- **28** repositories, show **adequate metadata documentation,** based on expert criteria, while the rest show **significant inconsistencies**
- **Supported data formats** of **orthomosaics, raw imagery, DSM/DEM products, and SfM point clouds.**
- **Most platforms** aligning with **Open Science and FAIR data principles.**

5.Discussion - Final Remarks

- ✓ The analysis of the UAV repository ecosystem demonstrates a **rapidly expanding** field but still **fragmented.**
- ✓ **Orthomosaic and terrain products** are the most common frequent shared datasets. Multispectral and other types of data sets (hyperspectral, lidar, thermal) are rather limited.
- ✓ From a thematic perspective, most repositories are primarily oriented toward environmental monitoring and precision agriculture applications, highlighting the dominant role of UAVs in environmental and land management studies.
- ✓ **The majority of repositories provide adequate metadata documentation. However, while some are characterized by inconsistencies** in metadata standards and licensing clarity.
- ✓ **Data sharing policy** is mostly **open** indicating most repositories have strong alignment with FAIR policy but **unevenly applied** and **not clearly documented.**

All in all, preliminary results show a clear need for dedicated UAV repositories, with standardized metadata and licensing practices for long-term data reuse.

Project Information Resources:

Accelerate MSCA
accelerate@hua.gr
ACCELERATE MSCA
Accelerate MSCA

References

1. Bowden, W. B. (2010). Climate Change in the Arctic – Permafrost, Thermokarst, and Why They Matter to the Non-Arctic World. Geography Compass, 4(10), 1553-1566. https://doi.org/10.1111/j.1749-8198.2010.00390.x 2. European Commission. (2022). *A Drone Strategy 2.0 for a Smart and Sustainable Unmanned Aircraft Eco-System in Europe*. European Commission. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022DC0652 3. European Environment Agency (EEA). (2023). *From policy ambition to environment and climate action in Europe*. European Environment Agency. https://www.eea.europa.eu/en/newsroom/editorial/environment-and-climate-action-in-europe

This project has received funding from the European Union's Horizon research and innovation programme under grant agreement No. 101182930

Funded by the European Union

Petropoulos G. P.[1], Detsikas S. E.[1], Polychronaki M.[1], Tselos G.-N.[1], Drakopoulos F.[1], Asimakopoulos C.[1], MasouridisP.[2], Petkowski M.[3], Nikushev D.[3], Grigoriadis K.[4], Katsou E.[5], Litke A.[6]

The study explores the current landscape of UAV data repositories, focusing on accessibility, interoperability, and FAIR data-sharing practices. Through the analysis of 51 repositories, the research highlights the growing use of UAV datasets in environmental monitoring and precision agriculture, while also identifying challenges related to metadata consistency, standardization, and long-term data reuse. Preliminary results underline the need for dedicated UAV repositories with improved documentation, harmonized licensing policies, and stronger alignment with Open Science principles.

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SECONDMENT TESTIMONIALS

HUA Secondment to University of Bucharest, Romania

Maria Polychronaki, a member of the Harokopio University, performed a secondment to University of Bucharest, România, under the supervision of Ionuț Șandric. Her secondment began on December, 2025 until April, 2026. As part of the project, Maria contributed to the activities of Work Package 4 (WP4).

She actively involved in Task 4.2, supporting the implementation of use cases related to the observation and management of cultural heritage under environmental and anthropogenic pressures. She also contributed to scientific dissemination activities.

HUA Secondment to WaltR in Toulouse, France

Georgios-Nektarios Tselos, a research assistant from Harokopio University in Athens (HUA), performed a secondment to WaltR in Toulouse, France, for a period of four (4) months. This period began on January, 2026 until May, 2026. During his secondment, he contributed to the ACCELERATE project, with a focus on Work Package 4 (WP4).

Throughout this period, he participated in several meetings and engaged in active collaborations with members of WaltR, fostering knowledge exchange and further strengthening his expertise. He also continued the collaboration while gaining valuable knowledge and experience.

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SECONDMENT TESTIMONIALS

HUA Secondment to WaltR in Toulouse, France

Anastasia Tsagkaraki and Sosanna Kapsokefalou, researchers from Harokopio University in Athens (HUA), were seconded to WaltR in Toulouse, France, for three (3) months February, 2026 until May, 2026. During their secondment, they contributed to the ACCELERATE project, with a focus on Work Package 4 (WP4).

Throughout this period, they participated in couple meetings and engaged in active collaborations with members of WaltR, fostering knowledge exchange and strengthening their expertise. They also look forward to further collaboration while gaining valuable knowledge and experience.

WaltR®

HUA Secondment to Imperial College of London, UK

Kerasina Bekouli, research assistant from Harokopio University of Athens (HUA), started her secondment, at Imperial College in London, UK hosted by Professor Evina Katsou.

Her secondment started on March, 2026 until May, 2026. During her secondment, she contributed to the ACCELERATE project, focusing on the WP4. She looks forward to collaborating with the members of the ICL and gaining knowledge and experience

IMPERIAL

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SECONDMENT TESTIMONIALS

HUA Secondment University of Bucharest, Romania

Christos Asimakopoulos, a researcher from Harokopio University of Athens (HUA), started his 4-month secondment on March, 2026 until July, 2026 at PlanetGIS Sky in Sinaia, Romania.

As part of the ACCELERATE project, Christos contributed to the activities of Work Package 4 (WP4): Case studies Implementation, specifically focusing on Use Case 2 (UC2) and the application of Deep Learning techniques for vineyard segmentation.

Giacomo Carli, a researcher involved in the ACCELERATE Project, is currently seconded to Harokopio University in Athens (HUA) for a period of one (1) month. During his secondment, he is contributing to the project activities within Work Package 5 (WP5), with a focus on sustainability impact assessment and collaborative research tasks.

Throughout this period, he has participated in meetings and engaged in active collaboration with project partners, fostering knowledge exchange and strengthening his expertise in interdisciplinary research and innovation.

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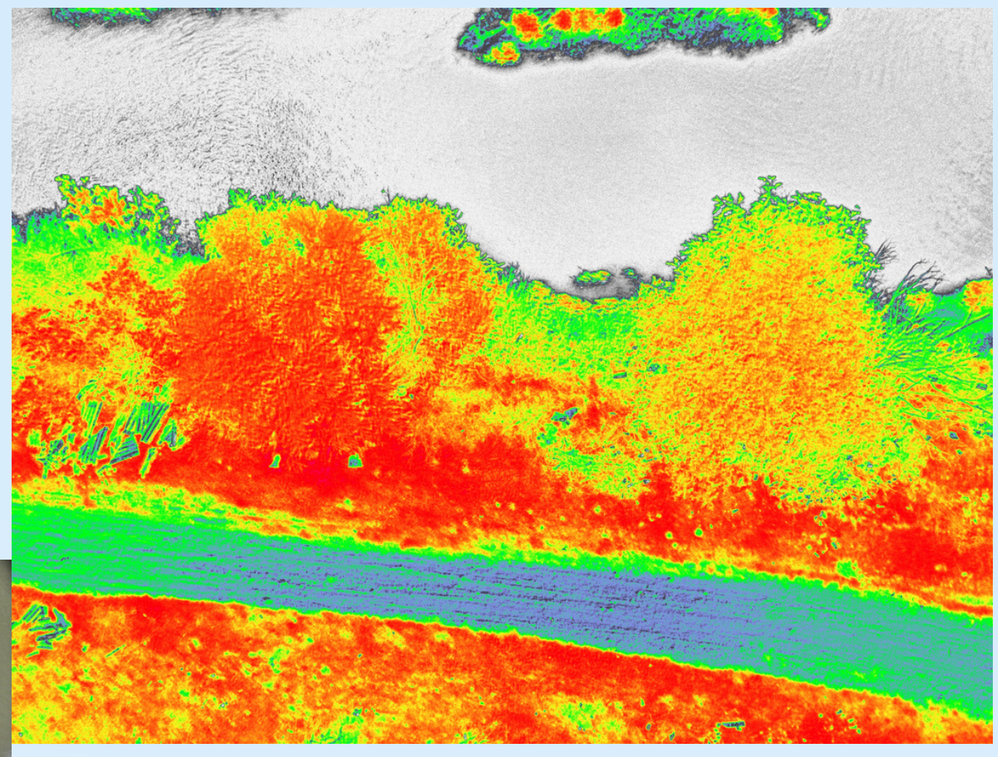
FIELD CAMPAIGNS

Field campaign 1 – Budești, Argeș River, Romania

The field campaign in Budești and Soldanu localities, along the Argeș River, Romania, was carried out on 19 April 2026 as part of the ACCELERATE project use case focused on plastic waste detection. The activity was coordinated by Ionuț Șandric, Assoc. Prof., Faculty of Geography, University of Bucharest, and involved the University of Bucharest field team, students, and project collaborators. Additionanlly, seconded researcher Christos Asimakopoulos from the Harokopio University of Athens (HUA) took part as well as visiting researcer Noemi Pagano from Polytechnical University of Bari. UAV-based RGB, multispectral, and thermal imagery were collected over riverbank environments affected by visible plastic accumulation. Both nadiral and oblique flight configurations were used to capture plastic waste under different observation angles and surface conditions. The campaign targeted plastic objects located on bare ground, within vegetation, partially covered by vegetation, and close to or inside water bodies, providing representative training data for developing an AI model capable of detecting plastic litter in complex riverine landscapes.



UNIVERSITY OF BUCHAREST

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FIELD CAMPAIGNS

Field campaign 2 – ACCELERATE Agriculture Use Case

In April 2026, the team at AgFutura Technologies conducted field operations within the framework of the ACCELERATE MSCA Project at the designated vineyards of the Agriculture Use Case, under the scientific supervision of Mario Petkovski, highlighting the significant potential of UAV technologies in modern viticulture.
During the field campaign, drone flights were successfully performed across the vineyard area, enabling the acquisition of high-resolution aerial data for precision agriculture applications. The collected data will support the development of advanced analytical workflows, with the first phase focusing on vineyard trunk counting.
This initiative represents an important step toward intelligent monitoring systems that improve crop assessment, resource management, and sustainable farming practices. Through the ACCELERATE project, UAV technologies continue to advance sustainable agriculture by supporting efficient field monitoring, high-precision geospatial data acquisition, and environmentally responsible agricultural management.

Drone Videos will be available soon in our site:

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FIELD CAMPAIGNS

Field campaign 3 – Bihor field campaign

Between *4-9 May*, the UC4 team of the ACCELERATE project conducted a non-invasive archaeological survey campaign in Bihor County, Romania, documenting six archaeological sites using advanced airborne technologies for cultural heritage research.

Using UAV platforms equipped with LiDAR and thermal sensors, the team collected geospatial data to identify, map, and analyze archaeological remains hidden beneath vegetation or difficult to detect from the ground.

The campaign focused on both previously known sites that could no longer be accurately relocated and areas with high archaeological potential that remain poorly documented. The collected data will support high-resolution terrain models, microtopographic analyses, and interdisciplinary studies for the investigation and protection of archaeological heritage.

The campaign was carried out through the collaboration of specialists from Institutul Național al Patrimoniului, University of Exeter, ERA Arqueologia, and Harokopio University of Athens.

Through these activities, the ACCELERATE project continues to advance innovative methods for digital documentation and spatial analysis in cultural heritage research, management, and preservation.

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EVENTS

Participation in events 2026

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!!!THIS page will be updated, with new material taken from the actual event after is done!!!

On 20 May 2026, the ACCELERATE Mid-Term Meeting took place at the Department of Geography of Harokopio University of Athens, bringing together the project partners. During the meeting, the progress of the project activities was presented, the results achieved so far were discussed, and the next steps for the successful implementation of the project were defined.

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ACCELERATE WORKSHOP AT THE 45TH EARSEL SYMPOSIUM

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DEPARTMENT OF GEOGRAPHY

"UAV's Applications for Sustainable Environmental Management"

The 1st workshop of the ACCELERATE project will be organised during the 45th EARSeL Symposium, hosted by the Department of Geography at Harokopio University

The Workshop's Scientific Committee:

- Anna Zmarz - University of Warsaw, Poland
- George P. Petropoulos - Harokopio University of Athens, Greece
- Ionuț Sandric - University of Bucharest, Romania
- Lammert Kooistra - Wageningen University & Research, Netherlands
- Salvatore Manfreda - University of Naples Federico II, Italy

The workshop will bring together researchers, practitioners, and UAV experts working on environmental monitoring, precision agriculture, and sustainable management applications.

We eagerly await your attendance and warmly thank all those who have already stood by this initiative!

More Infos in: https://athens2026.earsel.org/

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PARTICIPATION IN HUA OPEN DAY 2026

On February 2026 the Department of Geography at Harokopio University welcomed high school students and visitors for this year's inspiring Open Day.

24/02 /2026 - 26/02/2026

The ACCELERATE project team presents the power of drones in environmental monitoring and research Visitors got hands-on insights into: (a) How drone technology supports data collection for climate and land-use studies, and (b) real-world applications in precision agriculture and environmental assessment Innovative tools and methodologies developed within the ACCELERATE project.

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Students from **27** different high schools visited the University during those days.

More than **1050** students appeared

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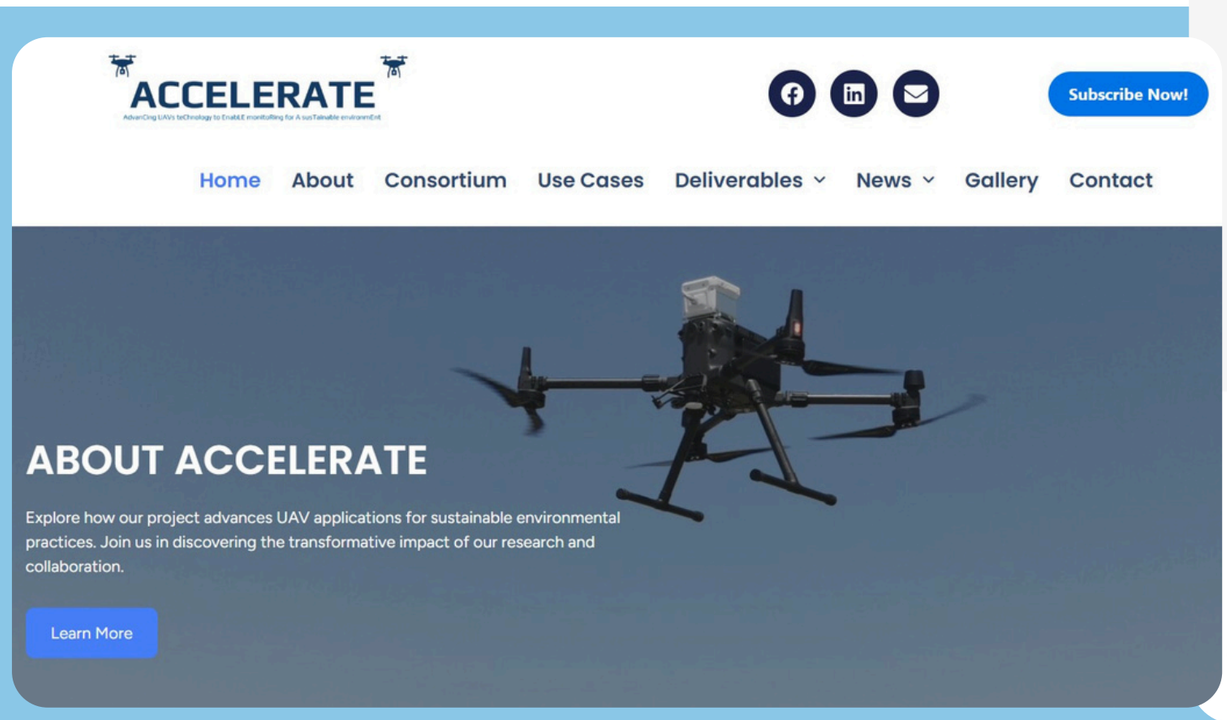
ACCELERATE SOCIAL MEDIA

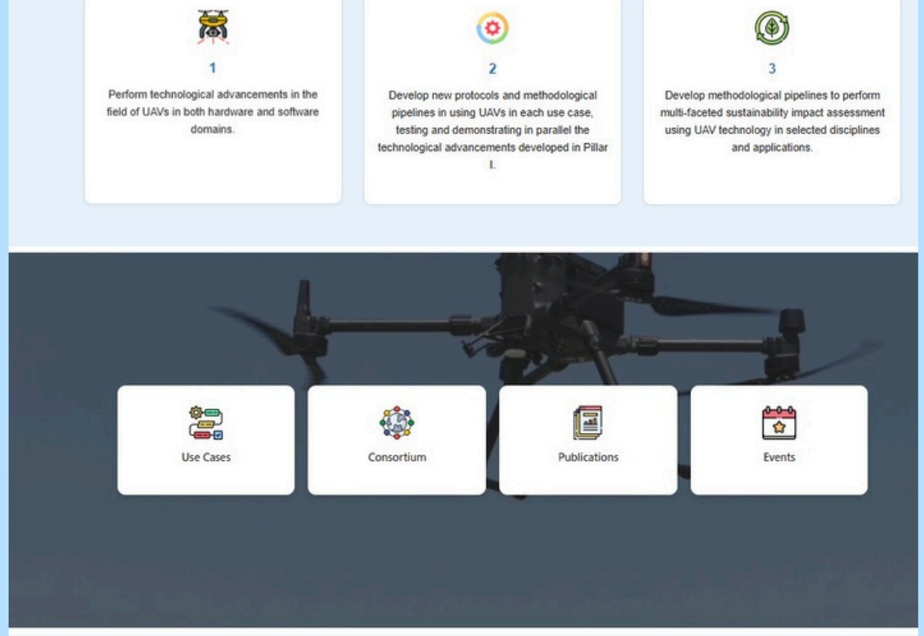
Website



https://www.accelerate-msca.eu

Linkedin

https://www.linkedin.com/company/accelerate-msca-project/posts/?feedView=all



Facebook

https://www.facebook.com/people/Accelerate-MSCA/61572219954007/

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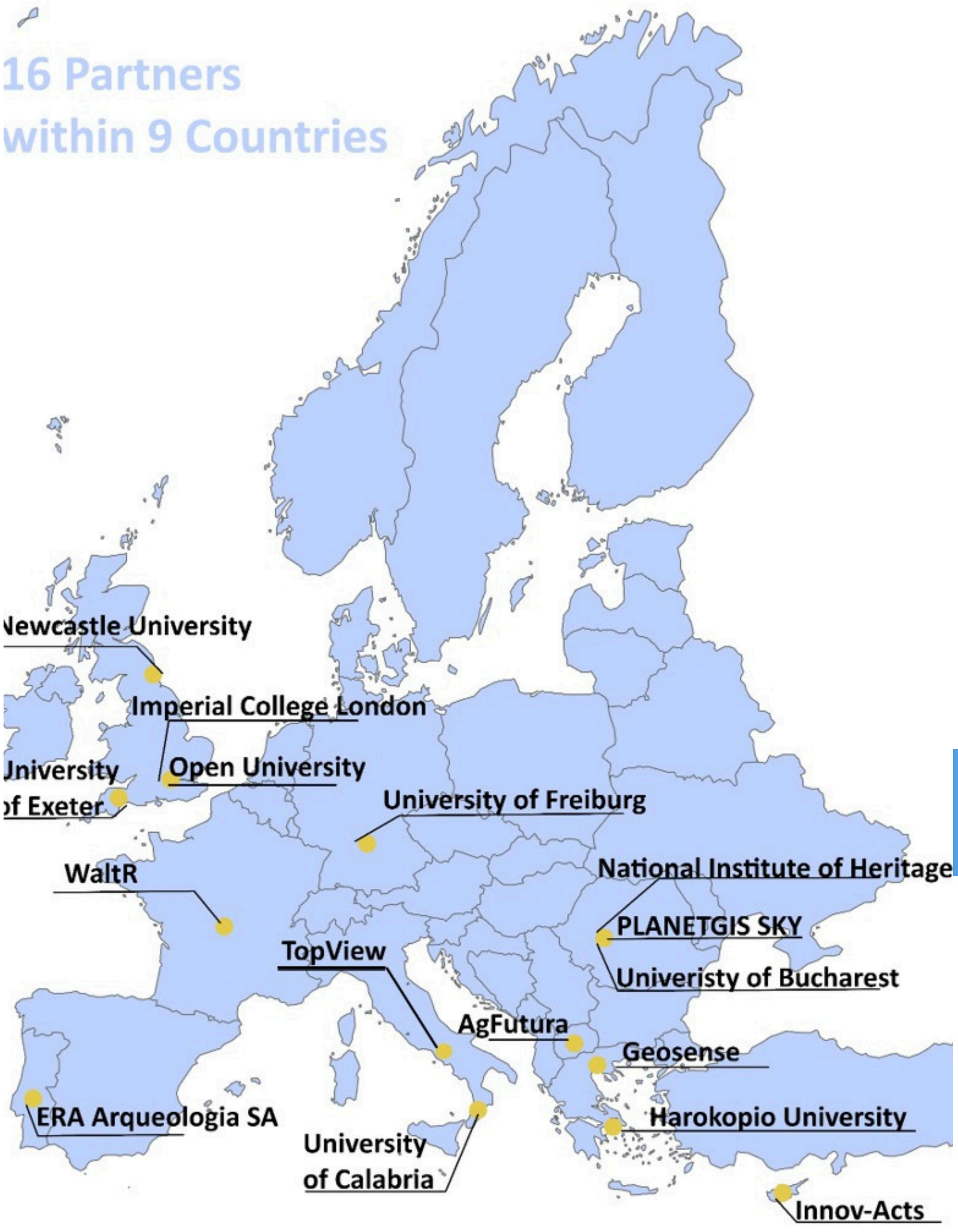
ACCELERATE CONSORTIUM

16 Partners
within 9 Countries



ΧΑΡΟΚΟΠΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ
HAROKOPIO UNIVERSITY

The Open University

TOPVIEW LOOKING OVER

Institutul Național al Patrimoniului
Ministerul Culturii

IMPERIAL

University of Exeter

NÚCLEO DE INVESTIGAÇÃO ARQUEOLÓGICA

ERA ARQUEOLOGIA

WaltR®

Gissky

The Call for Abstracts will open on 02 December 2025.
We look forward to your contributions and your support

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Newcastle University

Innov-acts

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UNI FREIBURG

Project Title: ACCELERATE AdvanCing UAVs teChnology to Enable monitoRing for A susTainable enviromEnt
Coordinator: Harokopio University of Athens
Principal Investigator: Dr. George P. Petropoulos
Duration: 48 Months

CONTACT US

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