

## Flagship 2.6.3: AI algorithm for (satellite) imaging reconstruction

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Report for WP6 meeting, 15/01/2025





## Milestones and KPI of flagship 2.6.3

### **MS10 (to be completed by August 2025)**

- TAR6.10 [MS report for UC2.6.3: Implementation of the selected technology(ies); test and validation on selected dataset(s). Proof-of-Concept deployment]. **KPI:** [Final report provided; release of the developed code on public repository];

### **MS10– Intermediate report**

#### *KPIs*

KPI ID	Description	Acceptance threshold
KPI2.6.1.1	Publications	2
KPI2.6.1.2	Presentations at conferences	2
KPI2.6.1.3	Publicly available Code repositories	1
KPI2.6.1.4	Use case Test Datasets	1

#### **Current status**

2 published + 2 in the process of publication + 1 under review + 1 to submit

3 + 2 abstracts submitted + 1 conference opportunity

1 in preparation and to made public before the end of the project

6



## KPI 2.6.1.1: Publications (2)

### ➤ **Already published: 2**

- D. Marletta, A. Midolo, E. Tramontana, Detecting Photovoltaic Panels in Aerial Images by Means of Characterising Colours, Technologies 2023, 11(6), 174 (**PAPER**)
- N. Lopane et. al., Geoelectric Joint Inversion for 3D Imaging of Vineyard Ground, Agronomy, 14 (11) (**PAPER**)

### ➤ **In the process of publication: 2**

- D. Marletta, A. Midolo, E. Tramontana, Automatic Land Use and Land Cover Classification by Means of Characterising Colours, Proceedings of IEEE WETICE, June 26-28, 2024, Reggio Emilia, Italy (**PROCEEDINGS**)
- G. A. Anastasi et. al., The Spoke 2 of the ICSC National Centre, with a focus on deep learning applications in astroparticle physics and satellite imagery, Proceedings of 13th CRIS-MAC 2024, June 17-21, 2024, Trapani, Italy (**PROCEEDINGS**)

### ➤ **Under review: 1**

- Virginia group's paper on last year acquisition campaign and analysis (**PAPER**)

### ➤ **To be submitted: 1**

- G. Piparo et. al., AI algorithms for satellite and airborne imaging reconstruction (**PROCEEDINGS**)



## KPI 2.6.1.2: Presentations at conferences (2)

### ➤ **Already performed: 3**

- G. A. Anastasi et. al., The Spoke 2 of the ICSC National Centre, with a focus on deep learning applications in astroparticle physics and satellite imagery, 13th CRIS-MAC 2024, June 17-21, 2024, Trapani, Italy (**TALK**)
- D. Marletta, A. Midolo, E. Tramontana, Automatic Land Use and Land Cover Classification by Means of Characterising Colours, IEEE WETICE, June 26-28, 2024, Reggio Emilia, Italy (**TALK**)
- G. Piparo et. al., AI algorithms for satellite and airborne imaging reconstruction, 110<sup>th</sup> SIF congress, September 9-13, 2024, Bologna, Italy (**INVITED TALK**)

### ➤ **Submitted: 2**

- European Geosciences Union (EGU) General Assembly 2025, 27 April to 2 May 2025, Vienna, Austria. **Abstract submitted by G. A. Anastasi.**
- ESA Living Planet symposium 2025, 23-27 June 2025, Vienna, Austria. **Abstract submitted by G. Piparo.**

### ➤ **Foreseen: 1**

- 76th International astronomical congress, 29 September to 3 October 2025, Sidney, Australia. **Deadline for abstract submission: February , 2025**



## KPI 2.6.1.4: Use case Test Datasets (1)

- **Deterministic Learning Algorithm for Object Identification: 2**
  - High-resolution satellite/aerial imagery for photovoltaic panel identification (**PUBLIC**)
  - High-resolution satellite/aerial imagery for land use segmentation (**should be PUBLIC**)
  
- **High-Resolution Image Processing Based on Spectral Indexes for Disease Detection in Vineyards: 2**
  - First acquisition campaign: 17 ha vineyard of Sangiovese grapes in Emilia-Romagna (Italy), August 8, 2023 (**PRIVATE**)
  - Second acquisition campaign: 2000 ha of vineyards in the provinces of Ravenna, Forlì-Cesena, Rimini and Bologna (Italy), July 8-19, 2024 (**PRIVATE**)
  
- **Deep Learning for Satellite Imagery Analysis: 2**
  - Sentinel2-L2A multispectral imagery based on Copernicus Emergency Management Service (CEMS) post-wildfire segmentation labels (**PUBLIC**)
  - Sentinel2-L2A multispectral imagery based on Ferrara group segmentation/identification of Flavescence doree labels (**PUBLIC/PRIVATE**)



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# Thanks for the attention

**Giuseppe Piparo<sup>1</sup>, Gioacchino Alex Anastasi<sup>2</sup>, Gabriele Galli<sup>3,4</sup>,  
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