

KP LABS

The shift to on-board data processing

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KP LABS

A new chapter in **on-board data processing**

End-to-End Hardware, Software, and Algorithm Solutions for Nano & Small Satellites



Established in **2016**



80+ space enthusiasts



2300m² of private R&D facility



7 missions, **35+** ESA/NASA projects



Gliwice, Poland

*Our vision is to become the European Leader in delivering **autonomous systems** for space applications.*



MISSIONS 7



PROJECTS

Ongoing:



Accomplished:





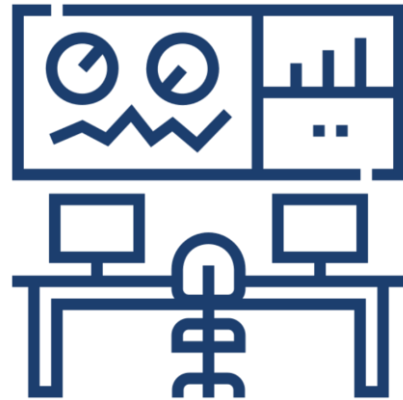
INTUITION-1

HYPERSPECTRAL EO SATELLITE

BEFORE



Satellite



Ground station



Analysis

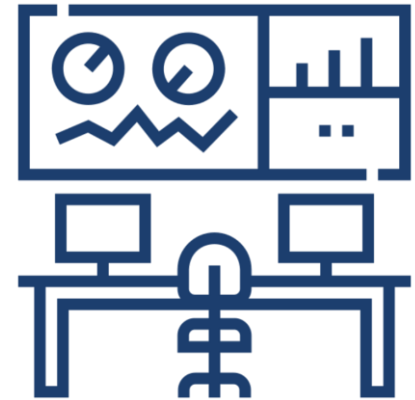
NOW



Satellite



Analysis

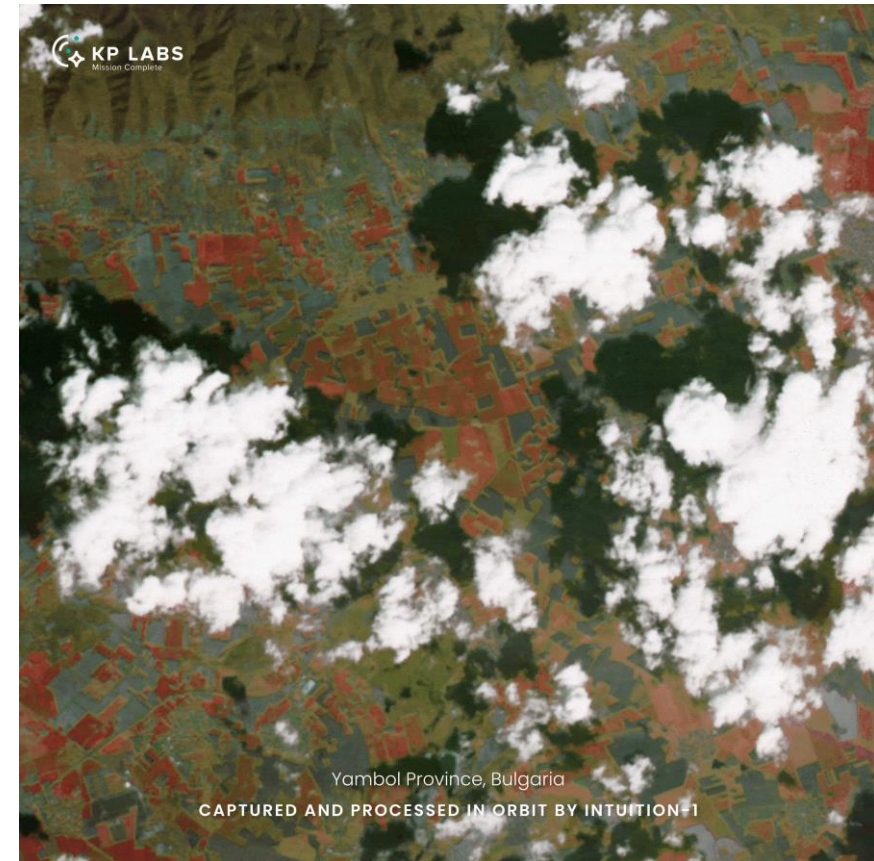


Ground station

INTUITION-1

6U CubeSat with 192 hyperspectral bands, launched in November 2023.

Red color shows vegetation. OBDP – Leopard DPU. Algorithms – cloud detection; data reduction.





FROM EXCEPTION TO RULE

ON-BOARD DATA PROCESSING IS A KEY STEP TO **SPACE AUTONOMY**

- Earth Observation
- In-orbit servicing
- Satellite communication
- Lunar exploration
- Deep Space missions

18 500
smallsats in
2022-2031*

1850
will use
some
OBDP

*According to a study "Prospects for the Small Satellite Market" by Euroconsult

WHY EDGE PROCESSING?

- **To lower operations costs**

Important for a large number of small spacecraft, where operations costs become a huge percentage of the overall costs.

- **To increase reaction speed to events**

Important for EO missions where real-time and near-real-time data could be crucial for crisis management.

- **To make spacecraft more autonomous**

Important for spacecraft management, proximity maneuvering, planetary rover operations and deep space missions.



APPLICATIONS

- Crisis management from EO satellites
 - e.g., next generation of Copernicus
- Cloud detection
 - e.g., Intuition-1, VIREO, Phi-Sat2
- SSA missions
 - e.g., ADRAS-J
- In-orbit servicing
 - e.g., ClearSpace-1
- Lunar missions



WHAT'S NEXT?

FUTURE



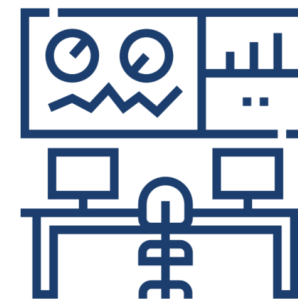
Remote Algorithms
and DPUs



Satellite



Analysis



Ground station



LEARN HOW TO DEVELOP AI ON REMOTE DPUs.

Today at E44, Hall 4 at 15:30

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www.kplabs.pl