# **Objective**

## **Context**

The project aims to overcome some of the current technological gaps of the hyperspectral technologies in the defence sector by developing a technological demonstrator for space and airborne remote sensing applications.



The HYPER-IP project will progress the state of the art by developing an advanced miniaturized and militarized SWaP-C (Small Size, Weight, Power and Cost) demonstrator to achieve high performance in terms of signal to noise ratio and frame rate.

The demonstrator will be integrated with a processing tool to enable real time understanding of the data. The final goal is to develop a hyperspectral system (imager and real time processor) to be used on small spaceborne platforms.

## EDA - HYPER-IP

#### Methodology

Hyperspectral Imaging Platform for the European Defence

To address SWIR spectral band challenges, new solutions for hyperspectral shortwave infrared imagers will be explored, focusing on improved SWaP-C factors.

Key technologies include nanostructured surfaces, rapid tunable filters, and snapshot imagers.

A trade-off analysis for a small European Defence hyperspectral demonstrator will involve modeling and simulation.

A new processing solution will be developed for real-time data handling, incorporating AI, deep learning, and advanced machine learning for target detection, material classification, and spectral matching. Computational architectures for real-time processing will be identified, tested with real and simulated data, and validated using an airborne platform.



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#### **Partners**



