



EO-ALERT

Next Generation Satellite Processing Chain for Rapid Civil Alerts

INTRODUCTION

EO-ALERT is an European Commission H2020 project coordinated by Deimos Space that proposes the definition and development of the **next-generation Earth Observation (EO) data processing chain**, based on a novel flight segment architecture that **moves optimised key EO data processing elements from the ground segment to on-board the satellite**, with the aim of delivering the EO product to the End User with very low latency (quasi-real-time).

EO-ALERT provides the technological building blocks for this next-generation EO data processing chain, with a view to future **autonomous EO satellites**. The EO-ALERT satellite concept is based on the establishment of an **on-board data handling and processing capability**, that enables the generation of EO products on-board the satellite and their direct transfer to the End User. This overcomes the bottleneck problem with the raw data transfer to ground in the classical EO data chain, avoids the transfer of EO data that is not of value, and allows for the provision of EO data with very low latency. EO-ALERT provides high-priority EO products from observations, made globally, to the ground and End User, **with a latency below 5 minutes**.

KEY AREAS OF INVESTIGATION

The EO-ALERT data handling architecture solves the very low latency EO data challenge through a combination of innovations. The architecture introduces innovative technological solutions, including

- **on-board image generation and processing** for the generation of EO products and alerts for Optical and SAR payload missions
- **on-board data compression and encryption**
- **on-board reconfigurable data handling**
- **high-speed on-board avionics**
- **reconfigurable high data rate communication links to ground.**

The project also showcases the application of **AI-based technologies** that underline several of the solutions.

APPLICATIONS AND EXPLITATION

These novel technologies are validated through their application to two user scenarios of high interest:

- **ship detection** (maritime surveillance)
- **extreme weather observation/nowcasting**

A maritime experiment will be run in 2020 for testing using two existing SAR and optical satellites.

The consortium is open to joint exploitation of these technologies in future EO missions

