

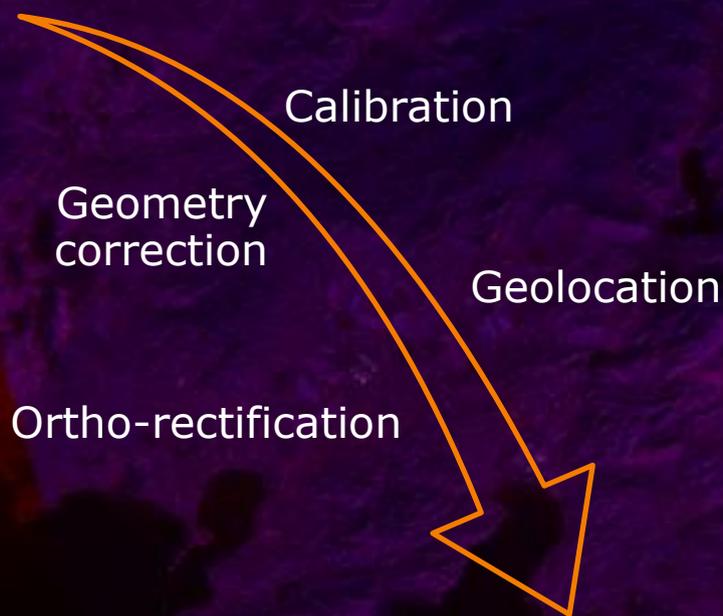


process4EO

image processing chain

Creating image products
from satellite raw data

Acquisition



Products

Working operationally in Deimos-2 mission

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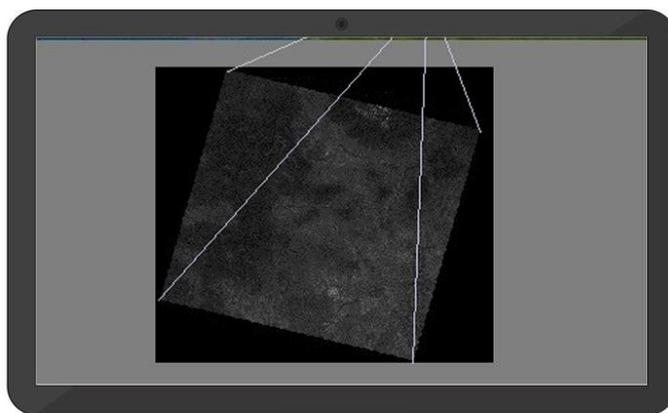
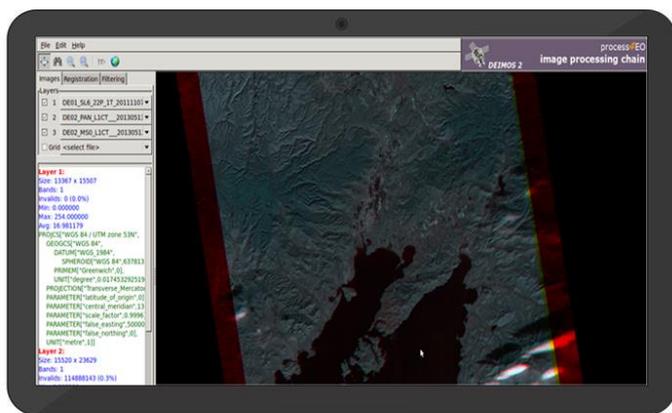
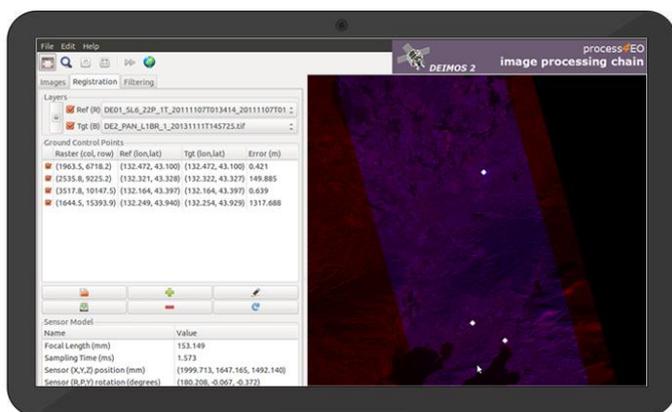
process4EO image processing chain

process4EO is Deimos self-developed data processing module, currently **in operations in the mission Deimos-2**. It enables the **processing of the satellite payload raw data to produce image products** by performing the following operations on the input data:

- **Radiometric calibration**, to convert the pixel elements from instrument digital counts into radiance units
- **Geometric correction**, to eliminate distortions due to misalignments of the sensors in the focal plane geometry
- **Automatic geolocation**, to compute the geodetic coordinates of the input pixels
- **Automatic ortho-rectification**, to produce ortho-photos with vertical projection, free of distortions

These steps also generate **quality-related figures of merit** that are made available in all the products. Moreover, the product processors generate **metadata**, in line with **industry standards**, to facilitate the cataloguing, filtering and browsing of the product image collection.

In addition to the fully automatic processing chain, an **advanced Manual Processing Chain User Interface** is available, with the main capabilities of a **Product Viewer, Image Filtering Tools** and a **GCP Tool**.



Deimos Space ground segment systems are built using a combination of **4EO products** working in a coherent and synchronized way, although all of them can also be used as **independent applications**.

plan**4EO**
mission planning

archive**4EO**
archive & catalogue

fly**4EO**
flight dynamics

process**4EO**
image processing chain

control**4EO**
mission control system

monitor**4EO**
monitoring & control

track**4EO**
ground station

calval**4EO**
calibration & validation

user**4EO**
user services

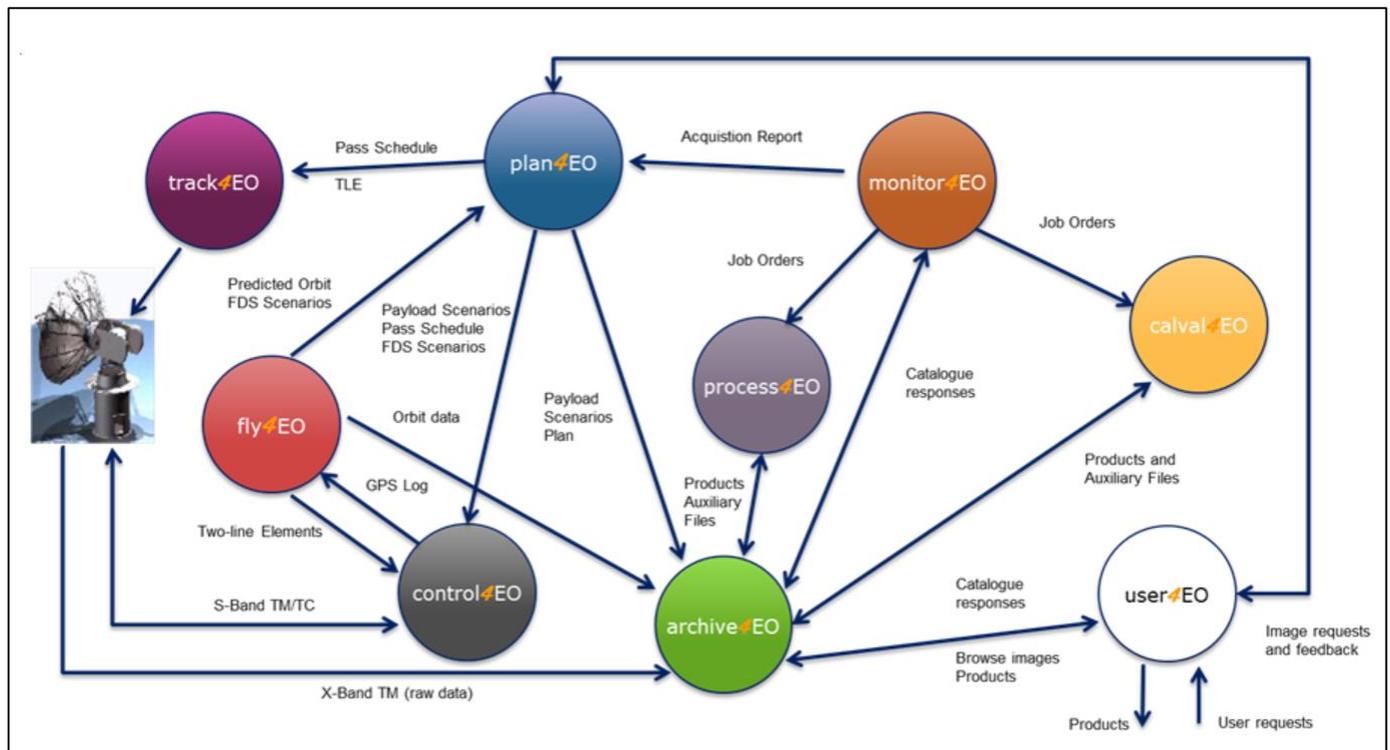
These products are already being used in different
ESA and Spanish Governmental missions.

Together they form **gs4EO**,
the **Ground Segment of DEIMOS-2.**

Thanks to its **modular design**, the **gs4EO** suite of ground segment products can be used to **customize the ground segment according to the customer's requirements**.

The various individual products can be assembled in different ways to implement different deployment configurations, **from a single product** supporting a specific mission need, **to a complete Ground Segment** or even a **Direct Receiving Station** that provides fast, direct and safe access to the mission data.

This modularity also provides extraordinary flexibility in order to accommodate **more than one Earth Observation mission within an individual** the ground segment.



The deployment shown above is the most typical set-up of all the Ground Segment elements, **providing all the ground segment capabilities required by the mission**.

With this solution, customers would mainly **access the spacecraft resources via the User Services, user4EO**, and all the data downlink and processing tasks would be performed in the single "central" ground segment (CGS).

Each application communicates with the remaining Ground Segment using file-based interfaces, easing its integration with other external solutions. The applications are controlled by means of **advanced user interfaces**, in many cases web-based, and **can be operated remotely**.

Many **gs4EO** components have **multi-mission capabilities** that allow the integration within the GS of third party missions. The archive component allows **the storage of data from different satellites** and the integration effort will depend on the specific interfaces of the third party missions.