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OHB-I nanosatellite constellation for Earth observation: a contribution to IRIDE

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OHB Italia has been awarded a contract for the delivery of a complete system, composed by a Space Segment, a Flight Operation Segment for constellation operation, and the Ground Processors for products generation. OHB-I activities also include the launch campaign, the procurement and in orbit operation of the constellation; for a true turnkey customer experience. The system is characterized by a short manufacturing time and affordable price.

The **OHB Italia** constellation can be configured on a wide range of Low Earth Sun-Synchronous Orbits and orbital planes, to optimize the system performances (e.g., Revisit Time, Latency, Coverage, etc.). The Space Segment is composed of **12 Eaglet-2 Satellites**, with options for additional batches, compatible with several Ground Station Network providing a flexible and cost-effective solution. The Flight Operation Segment is based on a customizable solution deployable in the customer Mission Control Centre, or cloud-based, or operated by OHB-I own operators. The Processors can be integrated into the customer own payload data processing and distribution segment. The products are geolocated, orthorectified, calibrated multispectral and panchromatic images, both as spot and strip acquisitions. Images are combined with AIS data, generating a data fused product.

IRIDE – OHB-I CONSTELLATION

OHB ITALIA

What is IRIDE?

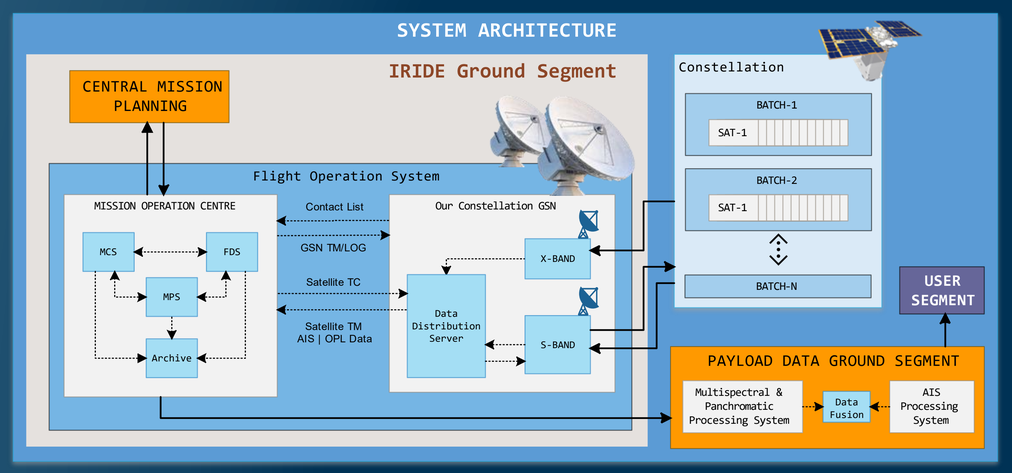
A CONSTELLATION OF CONSTELLATIONS

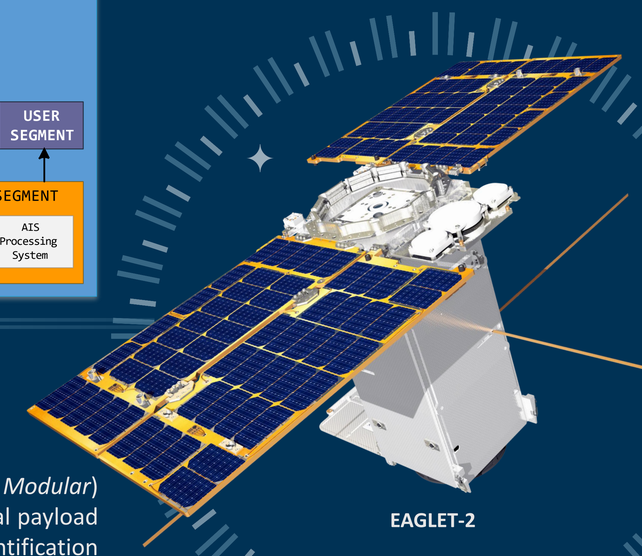
IRIDE is an ***End-To-End System*** consisting of:
- Several **LEO** constellations (***Upstream Segment***)
- A ground operational infrastructure (***Downstream Segment***)
- Services for the Italian public administration (***Service Segment***).

IRIDE is unique since it provides ***microwave imaging*** (Synthetic Aperture Radar, SAR), ***optical imaging*** at various spatial resolutions and in different frequency ranges, including **panchromatic**, **multispectral**, **hyperspectral**, and **infrared bands**.

Typical applications:
- Land coverage monitoring
- Coast and sea monitoring
- Change detection
- Naval traffic monitoring

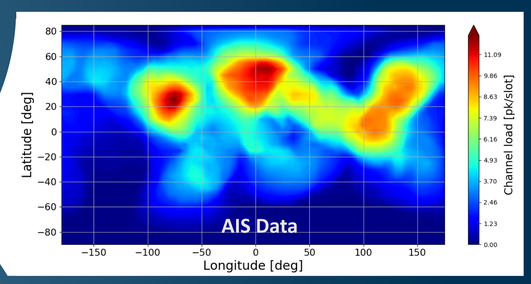
CONSTELLATION	
Satellites	12 + 12
Geometry	12 satellites per plane
Orbit	Sun-synchronous
Nominal Altitude	525 Km
Daily Imaging	~ 1 Million Km^2
Communication	S + X Band
Security	AES 256 (all links)
Operations	In-house or by customer
Production Rate	2 Sats/Month

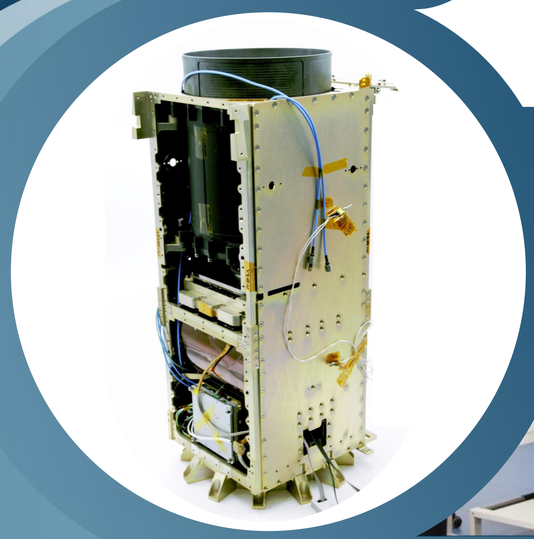



EAGLET-2

EAGLET 2

EAGLET-2 is a 25 kg nanosatellite based on OHB-I M^3 (*Multi-Mission Modular*) platform equipped with a TDI (*Time Delay Integration*) Multi-Spectral payload with high resolution (< 2m GSD) paired with an Automatic Identification System (AIS) receiver. The satellite is based on COTS units, to have the best combination of cost, performances, reliability and delivery time.





The satellite is based on flight-proven Commercial Off-the-shelf units, to have the best combination of cost, performance, reliability and delivery time. Careful selection and control of the supply chain is implemented to shorten the time-to-orbit and to support just-in-time production rates. Suppliers have been vetted to assess their financial stability and industrial capabilities and are regularly audited to verify the quality level of their processes and products.

Assembly, integration and testing (AIT) is performed in a dedicated area that can be scaled to increase the rate of production. Design-to-Production and Producibility aspects has been considered in the design of the Eaglet-2.

The first Eaglet-2 satellites will fly in Q1 2024. In 2024 OHB-I will deliver the complete system to be integrated in the Italian IRIDE Constellation, with a launch in the beginning of 2025.

SATELLITE	
Mass	25 Kg
Launch Envelope	< 30x30x57 cm
Lifetime	3 years
Propulsion	Electric, 150 m/s
Altitude	450-650 Km
IMAGING @525 Km	
Bands	RGB (550-900 nm)
Swath	18 Km
Strip Length	> 500 Km
Ground Sampling Distance	1.96 m
SNR	> 100
MTF	10%
Geolocation	CE90 < 100 m
Storage	24 GB
SHIP DETECTION (AIS)	
Always on, ~ 300 messages/minute	

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About the IRIDE constellation

The IRIDE Constellation is a programme of the European Union – *Next GenerationEU*

Funded by the European Union NextGenerationEU

Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA

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