**MISSION OBJECTIVES**
European wide-swath high-resolution twin satellites super-spectral imaging mission designed for data continuity & enhancement of Landsat and SPOT-type missions, for Copernicus operational land and security services. These applications include:
- land cover, usage and change-detection maps
- geophysical variable maps (leaf chlorophyll content, leaf water content, leaf area index, etc.)
- risk mapping
- fast images for disaster relief

**MISSION PROFILE**
- Launch: 2014  
- Launcher: Vega or Rockot
- 7 years lifetime (consumables for 12 years)
- Sun Synchronous Orbit at 786 km mean altitude
- Mean Local Time at Descending Node: 10:30
- Global revisit time: 5 days with 2 satellites flying concurrently (3 days at 45° latitude)
- Twin satellites on the same orbit, 180° apart from each other
- Land coverage: -56° to +83° latitude
- Maximum imaging time per orbit: 40 minutes
- Nominal nadir pointing, extended viewing capabilities
- Geo-Location: 20 m (2σ) without Ground Control Points
- Calibration: radiometric calibration on-board
- Security: TC authentication
- Operational configuration comprises 2 satellites

**SATELLITE PLATFORM**
- 3 axis stabilized earth pointing
- Star tracker, inertial measurement unit and 2-band GPS receiver for precise attitude and position knowledge
- Rate measurement unit, coarse earth sun sensor, magnetometer and magnetic torquers, thrusters, wheels
- Propellant: 117 kg Hydrazine ($N_2H_4$)
- Onboard position knowledge: <20 m (3σ)
- Onboard attitude knowledge: <10 μrad (2σ)
- Launch mass: 1200 kg
- Satellite dimensions (Stowed): 3.4 m x 1.8 m x 2.35 m
- Electrical power: > Solar Array: 7.2 m², 1700 W (EOL), GaAs Triple Junction Cells > Battery Capacity: 87Ah (EOL)
- Satellite power consumption: 1.4 kW (nominal mode)
- Payload data storage capacity:
  - 2 Gbits (End-of-Life) TM/TC storage capacity;
  - 2.4 Tbit (EOL) mission data storage capacity
- Communication links: > X-Band Science Data: effective 520 Mbps (8 PSK); > Optical Communication Payload for mission data retrieval through EDRS; > S-Band TT&C: 64 kbps up (SPL/PM), 128 kbps (SPL/PM) / 2048 kbps (OQPSK) down
- Thermal control: passive with Deep Space Radiator. Thermistor controlled Heater Circuits
- Reliability: > 0.7  
  
  Availability: 97%  

**SATELLITE PAYLOAD**
**MSI (Multi Spectral Instrument)**
- Imaging principle: filter based push broom imager
- Telescope design: Three mirror anastigmatic telescope with Silicon Carbide mirrors and structure, and dichroic beam splitter to separate VNIR and SWIR spectral channels
- Focal plane arrays: Si CMOS VNIR detectors, HgCdTe SWIR detectors, passively cooled (190 K)
- Electronics: front end, video and compression electronics, including state-of-the-art wavelet-based data compression
- Combination of on-board absolute calibration with a solar diffuser covering the full FoV, dark calibration over ocean at night, and vicarious calibration over ground targets
- 13 spectral bands: 443 nm– 2190 nm
  (including 3 bands for atmospheric corrections)
- Spectral resolution: 15 nm– 180 nm
- Spatial resolution: 10 m, 20 m and 60 m
- Swath: 290 km
- Radiometric resolution/accuracy: 12 bit / < 5%