

EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Data Management Systems (4)

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SENTINEL-3 PAYLOAD DATA GROUND SEGMENT

Abstract

The GMES (Global Monitoring for Environment and Security) programme is a European initiative, headed by the European Commission (EC) in partnership with the European Space Agency (ESA) and the European Environment Agency (EEA) for the implementation of information services dealing with environment and security, based on observation data received from Earth Observation (EO) satellites and ground based information.

Within this context, ESA is developing five families of Sentinel missions specifically designed for the GMES programme purposes. The Sentinels will provide a unique set for the Earth observations and in particular Sentinel-3 will provide medium-resolution and high-accuracy optical, radar and altimetry data with adequate revisit frequency, coverage and timeliness for marine and land applications.

The access to the Sentinel data will be provided through a dedicated Ground Segment infrastructure where the Payload Data Ground Segment (PDGS) is one building block. For Sentinel 3, this is currently implemented by ESA in conjunction with EUMETSAT, with VEGA as prime for the Core PDGS implementation part.

The development of the PDGS Sentinel-3 is essentially driven by the approach to the mission operations. The instrument acquisitions are systematic and fully driven by a pre-defined plan based on events. The pre-defined acquisition plan fulfils the need of the relevant GMES services that are supported by the mission. No user order is required to drive the satellite's activities. This leads to reducing the operations in terms of ordering and mission planning. The entire data processing chain is data driven, in a sense that each level of processing is triggered as soon as all the data (satellite data and auxiliary data) required for it to take place are available. The basic mechanism to disseminate the products to the users is the subscription mechanism, whereby the users subscribe to data sets, which are then automatically and systematically delivered. All Sentinel-3 products will be provided to the user in Near Real Time within 3 hours from sensing. Improved products based on refined auxiliary data will be made available in Short Time Critical within 48 hours and in Non Time Critical (NTC) within 1 month of sensing.

All the elements above enable an extensive level of automation of the operations, with operators' presence limited to supervision and maintenance for most of the facilities. The paper will present the implementation and deployment of the Sentinel-3 PDGS and show how it addresses those challenges.