EARTH OBSERVATION SYMPOSIUM (B1)
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SENTINEL-3 PAYLOAD DATA GROUND SEGMENT ARCHITECTURE AND DEPLOYMENT

Abstract

Sentinel-3 is one of the five families of Sentinel missions specifically designed for the GMES (Global Monitoring for Environment and Security) European programme. It 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 Sentinel-3 Payload Data Ground Segment (PDGS) is responsible for acquisition, processing, archiving and dissemination of the Sentinel-3 mission data. The PDGS is currently implemented by ESA in conjunction with EUMETSAT, with Telespazio VEGA Deutschland as prime contractor for the implementation of the Core PDGS.

The architecture of the PDGS is essentially driven by the mission operational concept, relying on (a) systematic acquisition fully driven by pre-defined plans based on events; (b) systematic generation of all mission products; and (c) dissemination to the users based on a subscription mechanism, whereby the users subscribe to data sets, which are then automatically and systematically delivered within strict timeliness constraints.

The Near Real Time (NRT) products are made available to the users within 3 hours from sensing based on the auxiliary data available at this stage. The Short Time Critical (STC) and Non Time Critical (NTC) improved products are provided within 48 hours and 1 month respectively.

The large amount of data generated by the mission combined with the strong timeliness constraints have required the development of a highly automated system with full data-driven production and dissemination relying on a mechanism of pipelining.

The development of the V1 of the Sentinel-3 PDGS was completed by mid-2013, and processing and archiving centres deployed at EUMETSAT in Darmstadt (Germany) and DLR at Oberpfaffenhofen (Germany). The overall PDGS will be completed in several steps in 2014. The V2 of the system will be available mid-2014, and will include the deployment of a Core Ground Station at Svalbard (Norway). The launch version is scheduled for the end of the year, and will also include two additional processing data centres, a Mission Performance Centre and a Payload Data Management Centre.

The paper will provide the status of the current implementation of the Sentinel-3 PDGS, concentrating on the architecture and deployment of the successive versions and on the extensions foreseen in the course of the coming year prior to launch in 2015.