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

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GS4EO: A NEW GROUND SEGMENT FOR EARTH OBSERVATION MISSIONS

Abstract

DEIMOS Ground Segments are based on the gs4EO suite of products. These state-of-the-art products are the result of the know-how gathered in more than a decade of work for the European Space Agency, specially evolved for supporting small Earth Observation missions.

gs4EO has been designed according to the following main drivers:

- Minimal operation costs, enabling the complete handling of all the spacecraft operations and the processing of the payload data with the minimum number of operators and reduced HW and maintenance costs. It also allows the remote operation of all of its components.

- Quick response to emergency acquisitions, allowing reprogramming the satellite operations in very short time, even in the same orbit of the acquisition and to download and process the corresponding images in near real time.

- Deployment flexibility, allowing to install the ground systems in different locations and using different sets of ground stations, both for monitoring and control and payload data reception. It allows to install independent S/C control or payload data processing systems or even individual facilities (e.g. mission planning).

- Expandability. gs4EO is a modular system allowing adapting its capabilities to future needs (for instance new processing levels or collaboration with external missions).

- Secure access to all of the GS elements with different user's roles and privileges.

gs4EO covers the complete functionality needed to monitor, control and exploit the mission:

- fly4EO for orbit determination, S/C manoeuvring and collision avoidance functions.

- plan4EO for generating the S/C schedules based on the users inputs and emergency requests.

- control4EO for commanding the S/C and handle its telemetry.

- monitor4EO for monitoring and orchestrating all GS elements.

- track4EO for S-band and X-band G/S management with the possibility to use third party stations.

- archive4EO for storing and cataloguing all the mission data allowing the use of confederated instances.

- process4EO for L0 processing up to automatic and/or manual orthorectied L1 products with the possibility to add new levels to the processing chain.

- calval4EO for monitoring and updating the on-ground and on-board instrument and processing configuration parameters.

gs4EO will be used to operate the upcoming Deimos-2 mission (a 1m resolution optical instrument mounted over an agile platform), to be launched in Q4 2013 and can be deployed in different configuration, as User Ground Segments, or to support third-party Earth Observation missions.