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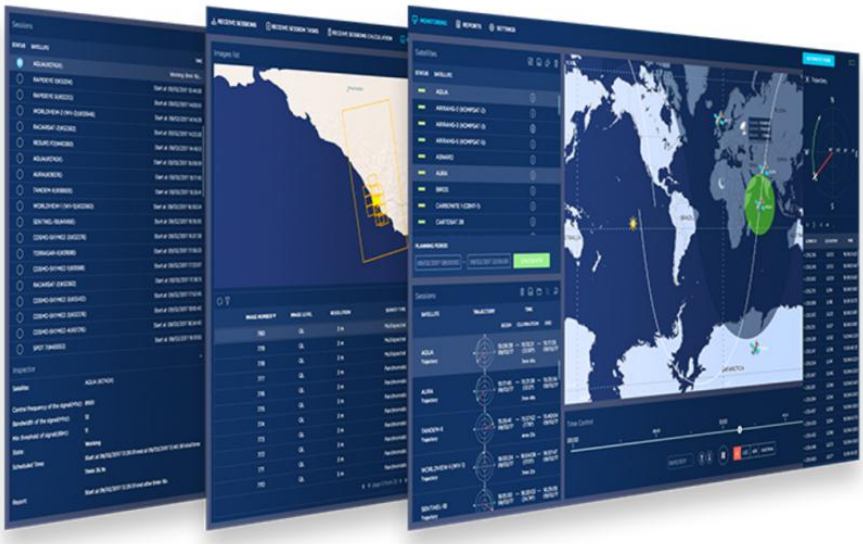


Software

TRITON Satellite ToolKit

TRITON Satellite ToolKit

is a line of interrelated software modules designed to solve problems of Earth remote sensing (ERS)

This software suite can be installed on both fixed and mobile units for receiving, processing and ERS data distribution

TRITON Satellite ToolKit includes the following modules:

- Task planning and control module
- Antenna control module
- Demodulator control and data recording module
- Data registration, storing and distribution module

Task Planning and Control Module

- Creation and editing of plans for HF signal reception from the satellite and preliminary processing of ERS data
- Generation of the reports on the results of communication sessions with the satellite
- Monitoring of software and hardware status
- Displaying the information on current status of the received data processing on the screen

Antenna Control Module

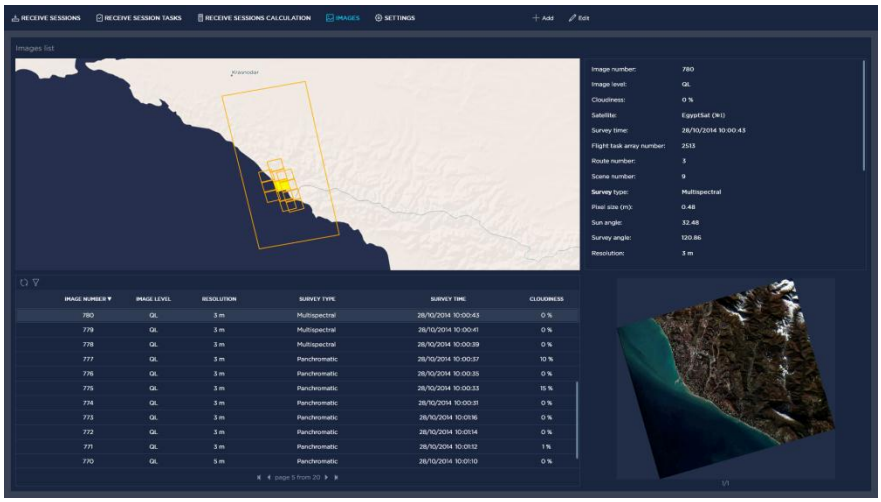
- Calculation of satellite orbits
- Calculation of communication sessions with the satellite for a specific antenna location
- Calculation of antenna travel trajectory for a specific session
- Tuning and control of antenna in various modes
- Analysis of spectral characteristics of the signal received
- Continuous monitoring of the status of all antenna system nodes
- Synchronization of time by the signals from GLONASS/GPS navigation systems
- Automated preparation for communication session with the use of diagnostic tests
- Visualization of all incoming and outgoing data
- Automated control of antenna system during the communication session

After planning of the required communication sessions, the software runs in automatic mode providing continuous diagnostic of all hardware and saving reports on parameters and errors of antenna pointing, as well as quality of radio signals for all conducted sessions

Demodulator Control and Data Recording Module

- Creation and saving the demodulator configuration
- Displaying the signal spectrum
- Displaying the signal vector diagram
- Measuring the signal power at the receiver input
- Calculation of S/N and Eb/No
- In-lock indication of carrier frequency, clock frequency, frame-based synchronization and connected decoders operation;
- BER measuring (with the modulator supplied);
- Writing the user-defined filters for post-processing of the data received
- Splitting the data into survey routes
- Automatic recording of raw flow, reports and metadata in database bound to communication sessions

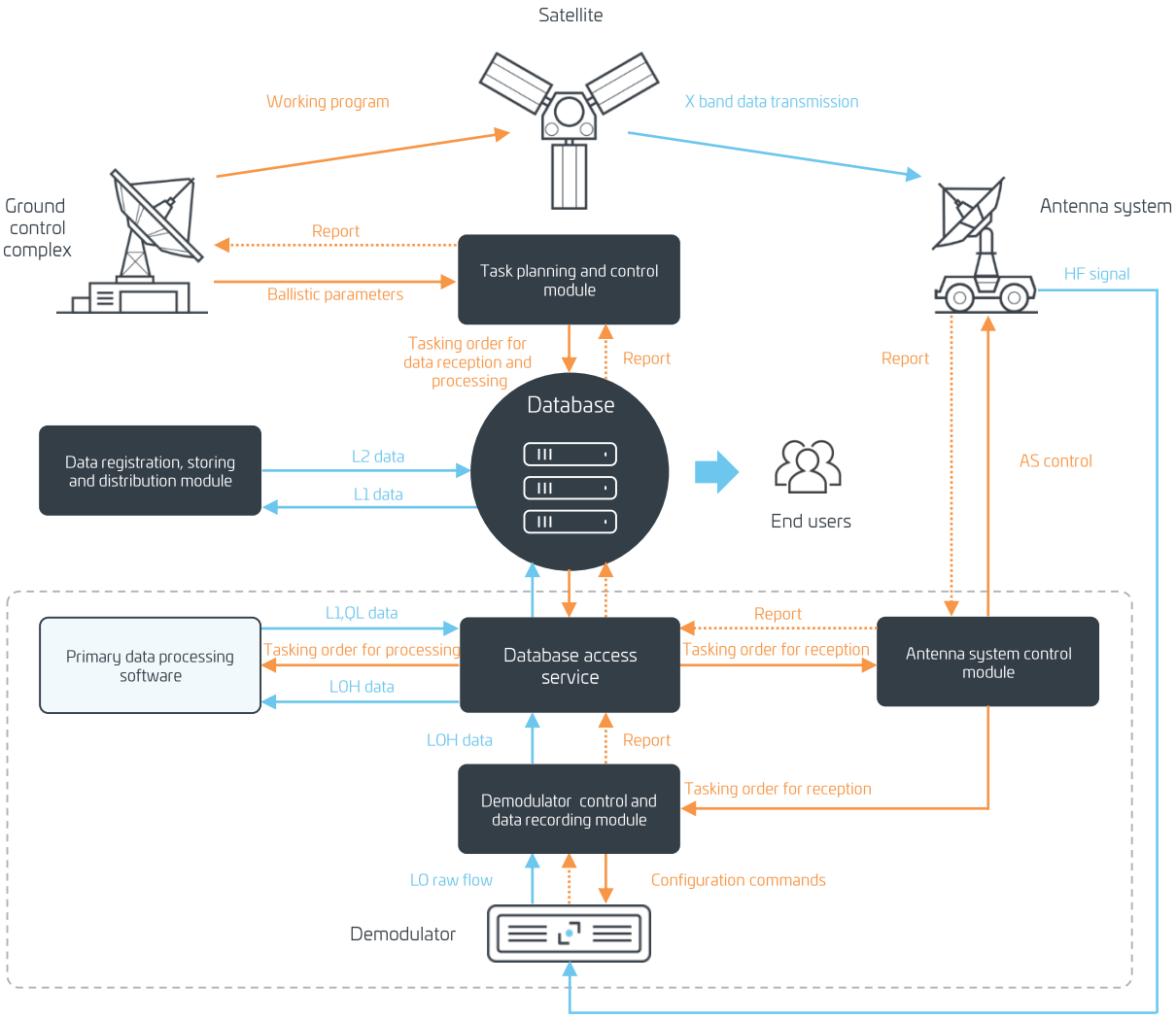
Data Registration, Storing and Distribution Module



- Reception of orders for survey, systematization and delivery of orders to the ground control complex
- Storage and cataloging of the data received
- Definition of data processing level
- Search for the information in database by various criteria
- Automated generation of the reports on database status
- Automatic data delivery from operational storage to archive
- Preparation of data for the delivery to the customer

Reception of orders for survey and transmission of orders to the ground control complex can also be performed by use of a specifically developed geoportal. For this solution CISCO ASA network equipment is applied to log all traffic and ensure protection from external threats.

Software Modules Functional Diagram



How it works

1. The ground control complex transmits the ballistic parameters form the satellite to the data receiving and processing complex in the form of initial conditions. Also, the time periods for the delivery of target information are transmitted

2. Operator of task planning and control module calculates communication sessions and plans necessary levels of data processing for each survey route. Approved task is recorded in the database

3. Five minutes before the start of the session, antenna system control module automatically receives the task order from the database access service, calculates the antenna travel trajectory and puts antenna to the starting point of the trajectory.

4. Two minutes before the start of receiption, the demodulator control and data recording module automatically configures the demodulator to the satellite radio link. Then, the signal is being received from the satellite.

5. After data decoding, the primary data processing software performs post-processing of the data. All the information decoded is automatically recorded in the database and bound to the specific communication session. Reports on the quality of reception are generated.

6. Data registration, storing and delivery module automatically assigns the tasks for procession of the data received up to necessary levels according to the previously agreed terms of reference.

After the operator has planned communication sessions with satellites and indicated required levels of image processing, the complex operates in automatic mode issuing messages to the operator, conducting continuous diagnostics of all hardware and storing images and metadata, as well as reports on antenna pointing errors and quality of radio signals for all communication sessions completed.

Advantages

- Fully automated reception and processing of ERS data
- Control of antenna systems of various types
- Integration of third-party software
- Flexible solutions for data delivery to the end users

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