



Data sheet - ORBIT

ORBIT is a multi-mission, multi-spacecraft flight dynamics system. It is designed for automated operations scenarios, providing a wide range of mission configurations from low-earth to geostationary orbits. It is built on the Terma Flight Dynamics framework.

WHAT IS ORBIT?

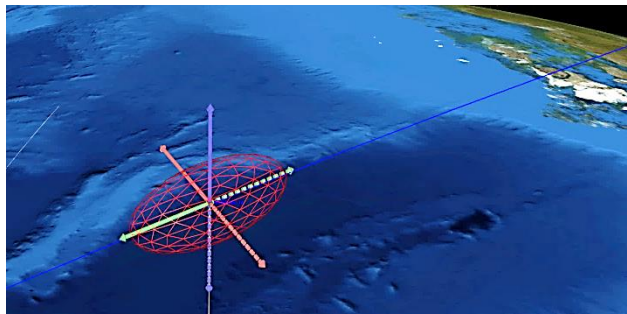
Operational Software used to monitor and control the orbit and attitude of a satellite in orbit.

WHEN IS ORBIT USED?

LEOP, Operational phase (station keeping, orbit maintenance), disposal.

WHO USES ORBIT?

Operators: routine operations, during nominal mission.
Flight Dynamics Experts: emergency only.

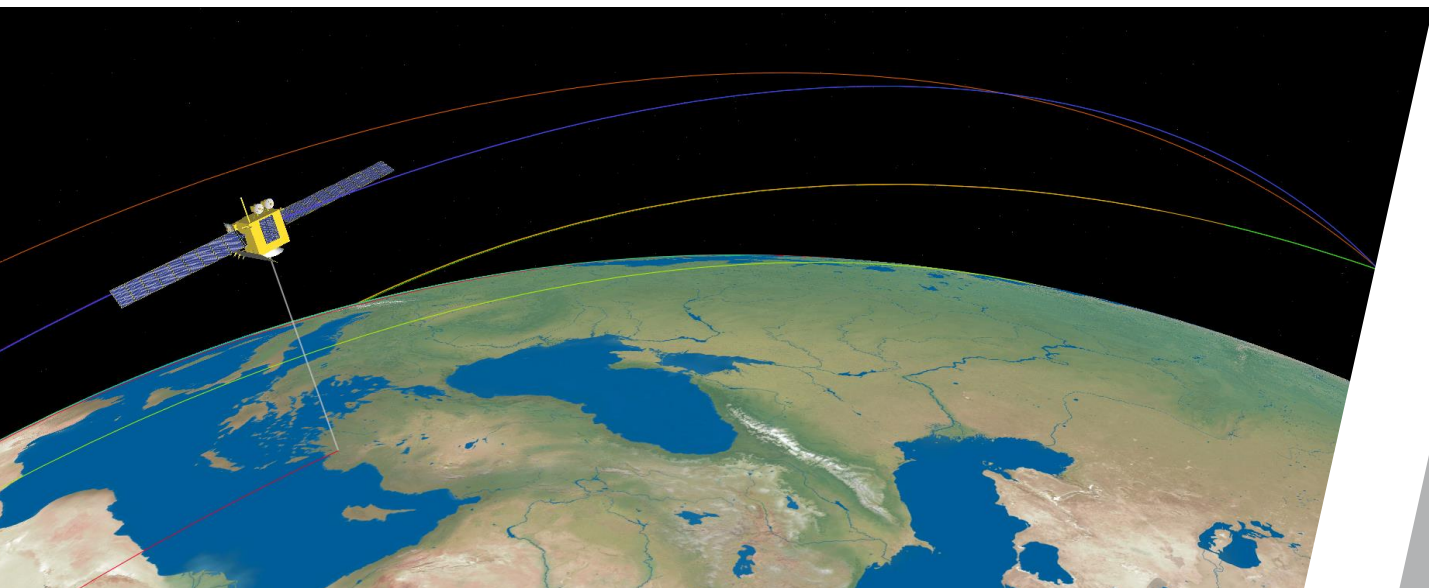


ORBIT DETERMINATION

Batch Least Squares: Off-line orbit analysis.

Extended Kalman Filter: "On-line" OD solution.

Ground Station Measurement Models: Distance (Range and Turn-around range), Angular (Azimuth/Elevation and Right-ascension/Declination).



ORBIT

Other Measurement Models: GNSS and Interlink Satellite.

Estimation: SRP, Thrust, Biases.

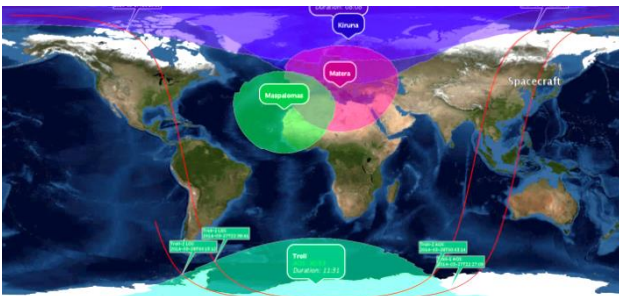
ORBIT PROPAGATION & EVENT PREDITION

Propagation: Fixed or Variable step, Keplerian, Cartesian, Runge Kutta, Dormand Prince, Covariance.

Force Models: Maneuvers, SRP, Earth Geopotential, 3rd Body Perturbations and Atmospheric Drag.

Satellite Events: Apogee/Perigee, Eclipses and User Defined Events.

Stations Visibility: Minimum elevation, Atmospheric model, Azimuth/Elevation masks.



Collision Avoidance: Multi-satellite propagation and close approach detection.

MANEUVERING AND COMMAND GENERATION

Reconstruction and Calibration: Maneuver performance estimation and calibration.

Calculation and Command: Station Keeping, Relocation, De-orbiting.

INTERFACES

GUI: Configurable, multi-user, web client .

File Formats: TLE (Two-line element sets), CCSDS OEM (Orbital Ephemeris Message), SP3 (National Geodetic Survey), SPK (SPICE Ephemeris Format), TDM (Tracking Data Message).

SUPPORTED APPLICATION INTERFACES

SCS5: Terma Spacecraft Control System.

TEMU: Terma Emulator.

SCOS-2000: ESA Mission Control System.

TRACK: Terma Spacecraft Visualization Tool.

OPERATING SYSTEMS

Windows®: works on all recent versions. Automated installer. Tested on Windows 7.

Linux® works on all recent distributions, installed as RPM. Tested on RHEL7.

MacOS® works on all recent distributions.

SOFTWARE PLATFORM

Java, based on Orekit (www.orekit.org) from www.cs.fr and Terma FD framework. No other free (e.g. GNU) software is packaged.

IPR owned by Terma, no export restrictions.

More information from <http://tgss.terma.com>