STREAMLINED SOLUTION FOR GEO AND LEO FLIGHT DYNAMICS OPERATIONS

Meridian
Flight Dynamics Ground System

Powered By
FreeFlyer®

Meridian Ground Systems is a turnkey, cost-effective solution for satellite mission operations. Optimizing common flight dynamics requirements in the GEO and LEO regimes, Meridian Ground Systems accesses the FreeFlyer® astrodynamics engine through user-friendly graphical interfaces specifically designed for streamlined spacecraft operations. Meridian Ground Systems provides system-specific planning and automation capabilities with minimal customization when integrating into a larger ground system, thus offering flexibility across hardware configurations, operating systems, and mobile platforms.

KEY FEATURES & BENEFITS

► Configurable for any ground system with a simple component architecture: the Meridian web interface, an internal data-base, and customized FreeFlyer Mission Plans

► Straightforward operator interfaces enable streamlined operations, allowing operators to easily manage daily functions, set up automated workflows, and integrate seamlessly with other ground system components

► Optimized for routine single or multi-spacecraft flight dynamics operations such as maneuver planning, orbit determination, orbit propagation, maneuver calibration and more

► Flexible use across various hardware configurations and operating systems, including mobile applications

FLIGHT DYNAMICS FUNCTIONALITY

Meridian is powered by FreeFlyer, the space mission design, analysis, and operations software used in more than 250 missions. The FreeFlyer software and accompanying scripts are executed by Meridian tasks to generate flight dynamics products. These tasks span the daily flight dynamics needs of LEO and GEO missions and include orbit determination, orbit propagation, orbit comparison, view period and eclipse/solar transit reporting, maneuver planning/ reconstruction/calibration, collision avoidance, relative motion reporting, and lifetime analysis. With Meridian, a.i. solutions can rapidly deliver a cost-effective modern flight dynamics ground system solution to meet the needs of a commercial GEO or LEO satellite.

SYSTEM ARCHITECTURE

Meridian is deployed as a simple set of software components: a web application, FreeFlyer with flight dynamics task scripts, and an internal database. This architecture allows for flexible configurations in any ground system, and allows an operator to interact with Meridian using a browser on Windows or Linux operating systems.

WEB INTERFACE

The web application is the interface layer for Meridian and provides access via a web browser or a REST API. User-based permissions and roles can be used to configure authenticated levels of control throughout Meridian. System activity is logged and can be sorted/ filtered to review runs and troubleshoot any issues. Operator inputs are stored internally and tied to the resulting products, making it easy to rerun tasks. The REST API machine interface allows Meridian to perform automated processes, ingest telemetry and tracking data, generate products on demand, and share those products with other ground system components.

Meridian orbit propagation

Enables manual and automated product generation
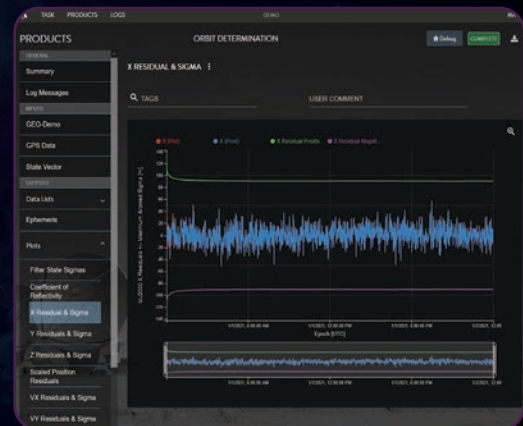
Meridian orbit determination

a.i. solutions®

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