

Overview

OASYS[®] is the high-precision Orbit Analysis System component of the EPOCH IPS[™] (Integrated Product Suite) system from Kratos ISI. OASYS is an integrated computational and visualization environment for space vehicle orbit and spin attitude operations and mission analysis on today's high-performance microcomputer workstations. OASYS provides full life cycle support for space vehicle orbit and spin attitude determination, orbit and spin attitude ephemeris propagation, mission maneuver planning and reconstruction, and on-orbit station-keeping. Using OASYS, space vehicles orbit analysts can manage a single space vehicle or a constellation of heterogeneous vehicle in any flight regime, from LEO (Low Earth Orbit) to GEO (Geosynchronous Orbit).

Spacecraft Operations

OASYS is a completely integrated, stand-alone space vehicle orbit and spin attitude analysis environment. OASYS is also the operational Flight Dynamics Facility for our EPOCH IPS suite of space vehicle TT&C (tracking, telemetry, and command) products.

EPOCH T&C[®] services automatically collect and format ground system antenna ranging and pointing data, spin attitude sensor telemetry, thruster telemetry, and fuel subsystem pressure and temperature telemetry in standardized OASYS ASCII-formatted messages. Based on the space vehicle telemetry and antenna network tracking data, OASYS computes definitive optimal estimates of the orbital elements, space vehicle spin attitude, thruster performance, and fuel remaining. OASYS also projects those estimates into the future in order to provide maneuver plans, station contact predicts, sensor and antenna interference predicts, and collision risk assessments.

Features

- Selected for over 100 different LEO and GEO missions
- Integrated modular design with natural OA operations flow
- Database-driven functionality
- Modern numerical methods and robust parameter estimation algorithms

Benefits

- Proven in both mission analysis and on-orbit operations environments
- Reduces integration, maintenance, and training costs by supporting operations for a heterogeneous vehicle fleet in a unified environment
- Eliminates compatibility problem inherent with multi-vendor modular systems and mission-unique applications
- Supports any satellite
- No costly custom code
- Fast, high precision, robust, and reliable computations

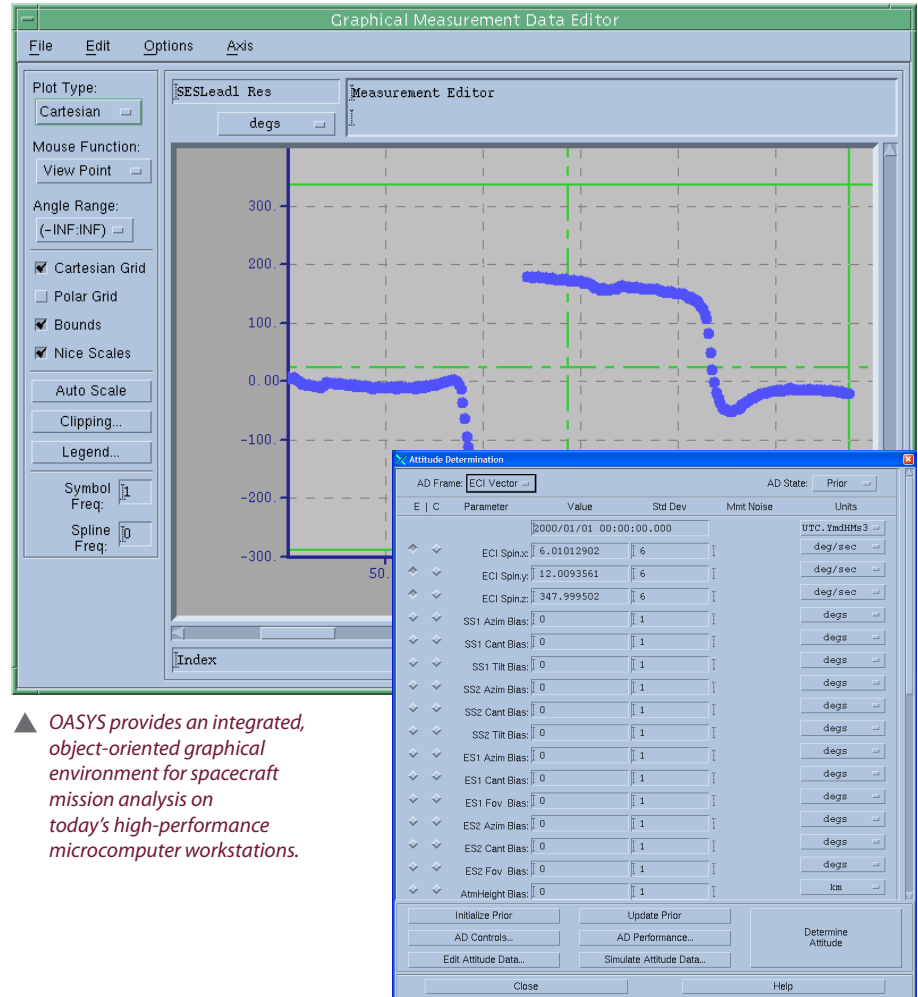
OASYS, in turn, provides EPOCH with pass-by-pass antenna drive and schedule data based on the optimized orbital elements, again in a standardized OASYS ASCII-formatted message. OASYS also provides vehicle-specific maneuver command table and ephemeris buffer upload messages for a variety of satellite buses including those from Lockheed-Martin, Space Systems Loral, Boeing, and Orbital Sciences.

Applications-Usage

Spacecraft analysts use OASYS to determine space vehicle orbit and spin attitude from observations, propagate a high-precision ephemeris to predict the future space vehicle orbit and spin attitude, and compute thrust parameters to maneuver the space vehicle into a desired orbit with the desired spin attitude. OASYS is the only orbit and spin attitude software package designed and built to meet the daily operational requirements of space vehicle fleet operators.

OASYS services include:

- Orbit and Spin Attitude Determination
- Orbit and Spin Attitude Propagation
- Orbit and Spin Attitude Maneuver Planning & Reconstruction
- On-Orbit Station Keeping
- Station Relocation
- End of Life Deorbit
- Covariance Propagation
- Close Approach Prediction
- Collision Risk Assessment and Mitigation
- Fuel Accounting
- NORAD SGP Two-Line Element Estimation and Propagation
- Ephemeris Parameter and Event Report and Visualization
- Sensor Interference Predicts
- Radio Frequency Interference Predicts
- Ground Antenna Contact Predicts
- Animated 2D and 3D Groundtrack Visualization platform



▲ OASYS provides an integrated, object-oriented graphical environment for spacecraft mission analysis on today's high-performance microcomputer workstations.

OASYS Automation Toolkit

For expert users in high-volume automated production environments, the OASYS Toolkit offers command line versions of OASYS services which run as background processes. The same services also are available in a library of C-callable object modules, enabling integration of OASYS services with custom applications.

OASYS System Requirements

OASYS may be installed on any UNIX or MS-WIN workstation. Both INTEL X86 and SPARC architectures are supported. A 3 GHz cpu, 2 GB RAM, and 20 GB disk space are recommended.