STK/SOLIS™

DYNAMIC END-TO-END SPACECRAFT SIMULATION

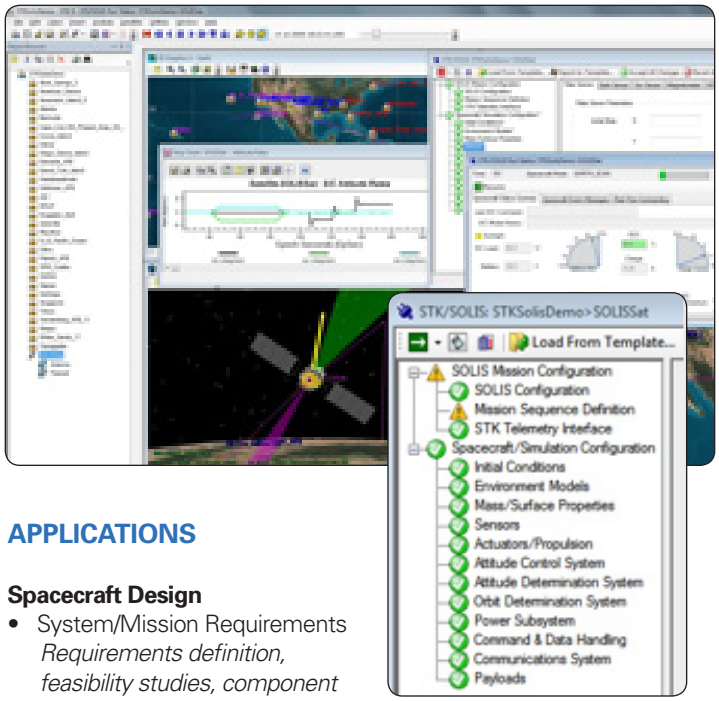
STK/SOLIS provides a complete spacecraft simulation environment in STK including full rotational dynamics; attitude determination and control; sensor and actuator models; and power and payload modeling.

STK/SOLIS features an easy-to-use graphical interface for configuring spacecraft components including the sensor, actuator, propulsion, power, communications and payload models. Mission design engineers can rapidly evaluate system trade-offs and ensure that spacecraft capabilities and constraints are considered early and are being met. Once the optimal configuration is achieved, spacecraft templates can be created and saved. If mission requirements change, the templates can be quickly loaded and reconfigured to asses the impact of the changes to the spacecraft's design.

After an accelerated design and analysis cycle using STK/SOLIS, the resulting flight software configuration can be targeted for actual flight avionics at the touch of a button. This capability is enabled by the STK/SOLIS architecture, which embeds a desktop version of ASI's on-board flight software. This modular flight software architecture that provides rapid spacecraft development, assembly, test and integration, as well as autonomous on-board operations and enhances integration and test with its high-fidelity "test like you fly" capabilities.

CAPABILITIES

- Attitude Disturbance Modeling
  Solar, atmospheric and gravity gradient torque models.
- Attitude Determination Sensor Models
  Sun, horizon, and rate sensors, magnetometers, star trackers.
- Attitude Control Actuator Models
  Reaction wheels, magnetic torquers, thrusters.
- Power Modeling
  Specify solar array size and power generation; battery capacity and discharge; and spacecraft loads.
- Payload Modeling
  Define payload power consumption and data production. Emulate payload mode.
- Communication Modeling
  Command/telemetry availability when ground stations are visible.
- Flight Software Emulation
  Mission sequence modeling, real-time commanding, telemetry, PID attitude control, fixed gain filter attitude determination, orbit determination.



APPLICATIONS

Spacecraft Design

- System/Mission Requirements
  Requirements definition, feasibility studies, component selection.
- Conceptual Design
  Analyze various system concepts to determine which can meet mission requirements.
- Preliminary Design
  Variations of conceptual designs are analyzed and refined. Define subsystem and component level specifications.
- Critical Design
  Final design verification of subsystem models and components.
- Risk Reduction and IV&V
  Independent validation and sensitivity/margin analysis.

Spacecraft Operations

- Training and analysis tool for ground operators and mission analysts.

STK/SOLIS is developed by Advanced Solutions, Inc. (ASI), an AGI business partner. ASI is an aerospace engineering company with more than 25 years experience specializing in Guidance, Navigation, and Control (GN&C) systems, flight software (FSW), spacecraft assembly/integration/test (AI&T), spacecraft mission operations, spacecraft command/telemetry systems, aerospace ground data systems and dynamic space simulation.

Learn more at agi.com/solis.

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