OVERVIEW

AceSIM is an open architecture, commercial product offering a highly customizable, physics-based modeling framework used to support system design, development, integration, test, training and rehearsals. AceSIM offers rapid deployment capabilities providing basic satellite Command and Telemetry within weeks, not months, enabling earlier development of ground, Bus, and Payload Systems. AceSIM’s Subsystem Models supplement “FlatSat” components reducing the demand on scarce hardware resources during Integration & Test Cycles. AceSIM integrates Payload & Bus Flight Software enabling training of operators early in the lifecycle and checkout of procedures before acceptance tests. A fully-modeled spacecraft ensures readiness for rehearsals and upcoming launch. AceSIM scales as the system’s requirements scale shortening Deployment Cycles, Accelerating Systems Integration, and Reducing Development and Operational Risks.

REAL -TIME SYSTEM SIMULATOR

HIGHLIGHTS

- Models Scale as Mission Requirements Mature
- Early C2/Bus/Payload Systems Development
- Early C2/Bus/Payload Systems Testing
- Early C2/Bus/Payload Systems Integration
- Early Ops Checkout and Automation Testing
- Early Operations Exercises and Rehearsals

BENEFITS

- Facilitates Rapid Cycles vs. Waterfall Deliveries
- Shortens Overall System Deployment
- Minimizes Rework by Finding Defects Earlier
- Reduces Demand for Scarce “FlatSat” Resources
- Improves Operational Team Performance
- Reduces Mission Readiness Risk

Let us help you simplify your next spacecraft/C2 deployment

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CAPABILITIES

- Simulation Control: Offers Play, Pause, and Stop controls for the simulation, as well as simulation duration and speed controls and simulation snapshot controls.
- Thread-safe Data Sharing: Datanodes are the state data which is persisted within the simulation, enabling thread-safe communication between models. Datanodes are defined for all common data types (int, real, string, arrays, etc.). Datanodes decouple direct model-to-model communications enabling complex systems to be modeled.
- Models: C++ dynamic link libraries (.dlls) that represent the mission space being simulated, simulation developers use pre-defined code templates to create all subsystems required for the simulation. Compiled Models determine the dynamics of how their associated Datanodes interact and change during the simulation, as well as how the Datanodes report information to the simulation engine.
- Model Controls: Provides access to functionality within each of the models enabling users to insert parameters, or change variables within the loaded models. The model controls also display status back to the user about the underlying functionality within the models.
- Alerts, Warnings, Errors and Out-of-Limits: Displays a continuous list of all Datanodes which are currently out of the nominal limits. Limits are defined as green, yellow, or red and have a corresponding visual flag.
- Search: Allows for keyword searches that query the Datanodes loaded within the workspaces. This also provides a visual representation of the value of the Datanodes discovered.
- Widgets: Widgets provide the capability to choose from a variety of indicators to graphically display and control Datanode values. In addition, display widget styles are customizable. The user may then save customized settings as a style for future use.
- Supporting Functions: Provides System Logging, User Manager & System Status, and Real-Time Asset Schedules.

HIGHLIGHTS

Spacecraft Subsystems
- Telemetry, Tracking & Commanding (TT&C)
- Flight Software (FSW)
- Attitude Control System (ACS)
- Electric & Power System (EPS)
- Reaction Control System (RCS)
- Propulsion
- Spacecraft Structure
- Thermal Control System (TCS)
- Payloads
- Sensors
- Crypto

Ground Station Subsystems
- Gateways
- Transmitters
- Receivers
- Recorders
- Modulators
- Digitizers
- Converters
- Switches
- Amplifiers
- Antennas

Front End Processor Subsystems
- Routers

Front End Processor Subsystems (cont.)
- Bit Sync
- Frame Sync
- Crypto
- Ground Station Adaptors

Other Models
- Activity Sequencer
- Line of Sight
- Sun, Moon, Earth
- Orbit Propagator
- Attitude Propagator
- Environment
- Mass Properties