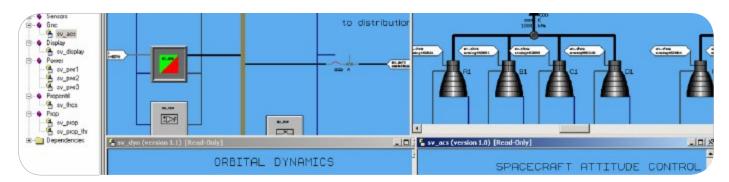The L3 MAPPS space vehicle simulation development tool provides a flexible solution to your space systems simulations needs. We offer our customers a whole range of possibilities, from a standalone model development platform to a completely integrated end-to-end customized simulator with hardware-in-the-loop. Off-the-shelf models and code generators are available for most commonly required components, such as:

- Orbital and attitude dynamics
- Environment (atmosphere, magnetosphere, solar)
- Electrical power generation and distribution
- Thermal solver (radiation, conduction)
- Guidance and navigation sensors
- Attitude control subsystem
- Communication subsystem
- GPS clocks, receivers, transmitters
- Ground control subsystem (STOL procedures)
- CCSDS telemetry/telecommand encoding

OBJECT-ORIENTED MODELING ENVIRONMENT

Pre-validated elementary objects are available in object libraries to permit a rapid and reliable build of complex models. The objects are generic and are customizable to the specific equipment characteristics to be simulated.

SOFTWARE-IN-THE-LOOP

Actual control system software (flight code) can be integrated in the simulator just by creating a wrapper object for it. The software can be integrated in source code format or as an external library. The real control system software can then be tested in a fully closed loop, with models of the environment, dynamics, sensors and actuators.

HARDWARE-IN-THE-LOOP

Actual equipment can be interfaced to the simulator via analog or digital interface objects that call the specific hardware device drivers. In this manner, a hardware component can be stimulated and tested in a fully closed loop, with models of the environment, dynamics, sensors and actuators.

CUSTOMER-PROVIDED MODELS

Models from customers or equipment vendors can easily be encapsulated and integrated in the simulator. We can integrate models written in Fortran, Ada, C or C++. code generated from Matlab/Simulink™ can also be encapsulated in our simulation environment. This permits the integration of models that the customer has already developed and validated and maximizes the re-use of models developed in other phases of the space vehicle development cycle.

COMPLETE LIFE-CYCLE SUPPORT

The simulator can be used from beginning to end of a space vehicle program:

- System/subsystem requirements verification
- System/subsystem design
- System/subsystem integration and testing
- Ground segment validation
- Operations support
- Training

REAL-TIME OR FASTER

The simulator can run in real-time for testing hardware-in-the-loop, for example, but can also run faster than real-time in order to permit the execution of several days of simulation in a few minutes.

L3 MAPPS

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