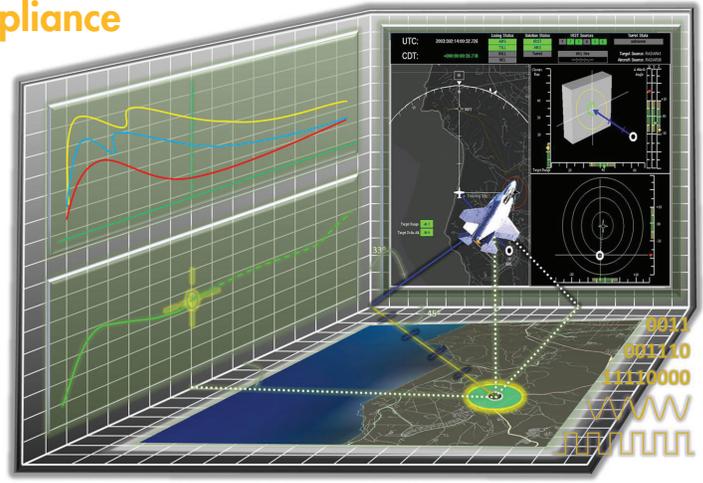


Real-Time Dynamic Telemetry Simulation Appliance

The TelSim all-in-one Telemetry simulation environment is designed to solve your mission simulation, telemetry ground systems testing, and training needs in a turnkey package. It is configurable for a wide range of simulations, ranging from simple sensor emulation, to interactive behavior modeling of complex systems and processes.

TelSim's simulation features enable operations and test organizations to enhance personnel and systems readiness without impacting availability of operational assets, accommodating a full range of realistic nominal and non-nominal mission scenarios. The TelSim provides real-time generation of PCM and other complex serial data streams. It's capable of fully independent operation that can be plugged-in to any telemetry ground station as a headless server, or with a fully interactive multi-user graphical user interface.

The TelSim modeling engine allows a systems engineer to quickly create interactive models using a point and click GUI or high level scripting language. A programming library is also available that supports the integration of 3rd party models. TelSim enables simulations to be scalable in fidelity so they can operate stand alone, or integrated with other models to create fully realistic mission simulations. TelSim also supports telemetry acquisition, processing, and recording for mission playback and replay of post decom data with simulation models.



Major Features:

- Fully integrated simulation environment that can model the continuous or discrete time behavior of any external system
- Dynamic data is commutated into a telemetry transmission stream in real-time
- Mission scenarios are easy to define and organize
- Simple user-friendly operation makes TelSim ideal for supporting all phases of testing and training

Typical Applications:

- Ground systems/test verification
- Interactive operations crew training (nominal & non-nominal dynamics)
- End-to-end mission simulations and dress rehearsals



Architecture:

- Real-time IRIG 106 telemetry simulation appliance capable of fully independent operation that can be plugged into any telemetry ground station
- Supports simultaneous telemetry acquisition, processing and recording for missions playback and replay of post decom data with simulation models
- Modular software architecture decouples telemetry-processing details from simulation environment
- Built on top of generic real-time command and control middle ware that includes service for data processing, visualization, archived, data reduction and analysis, and network centric operation
- Configuration and telemetry description managed using validation XML. Can exchange format data with any database scheme

Bit Synchronizer:

- Accepts all IRIG 106-09 PCM code types
- Bit Synch programmable input rates from 1 bps to 33 Mbps
- Less than 1 dB to theoretical bit sync BER performance
- All IRIG 106-09 code types are selectable for PCM output

Frame Synchronizer:

- Supports PCM streams from 1 bps up to 33 Mbps
- Supports up to 1024 minor frames per major frame

IRIG Time Code Reader:

- Supports IRIG A, B, G & NASA- 36

Simulation:

- Real-time and user configurable variable time engine
- Simulation modules: measurements (sensors/data waveforms), commands, events
- Built-in simulation waveforms modules
- Waveform module control: sample rate, amplitude, offset, period, bias, delay, etc. are configurable
- Simulation module operation: create update, query, delete
- Command module: evaluates a procedure, script, or function upon command receipt
- Event module: initiated by a synch trigger or condition: time, commands, or other groups behaviors
- External time sync or internal simulation time generation
- Open interface for integration of MATLAB and other third party analysis tools
- User defined modules: based on Tcl, C, or C++ returns a simulated value based on user defined algorithm
- Delimited modules: allows non-linear data or previously recorded data to be played from a file (ideal for TSPI simulation)
- Raw Playback of recorded data
- Simulation Development Environment

PCM Simulator:

- Programmable PCM streams from 1 bps up to 33 Mbps
- Frame Sync Archive playback capability
- Selectable output code type
- TTL and RS422 output capability

