StellaNGC | GNSS Simulator | m3 systems

StellaNGC Simulation

StellaNGC is a fully customizable and upgradable software suite which supports GNSS tests and measurements needs throughout the design cycle, from prototyping to manufacturing.

StellaNGC Simulation provides high-end functionalities (Hardware-in-the-Loop, Multi-Trajectory Generation, Inertial Measurement Unit Simulation) through an ergonomic and intuitive interface.

GNSS Sensor Characterization

Perform test & simulation to assess GNSS sensor performances (Tracking, PVT, Vulnerabilities)

Positioning Performance Evaluation

Support development of high performance solutions

System Integration

Perform hardware-in-the-loop system testing

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StellaNGC Simulation Key Features

Real-Time Trajectory Simulator

- Open-Loop (Trajectory is defined before simulation)
- Closed-Loop (Mobile motion is provided in real-time)

Open Real-Time Data Flow

- PVT and Raw Data outputs accessible via UDP protocol
- IQ-sample logging available for post-processing

Easy-to-Use HMI

- Ergonomic Graphical User Interface
- Application Programming Interface through TCP commands
- Monitoring widgets (Maps, Spectrum, Artificial horizon)

Highly Configurable IMU Model

- Configurable noise models (e.g. scaling factor, range effects, temperature effects)

Highly Configurable GNSS Model

- GPS, Galileo, GLONASS, Beidou, QZSS, SBAS
- Multifrequency (Low band, High band)
- Orbit configuration based on standard file types (Rinex, Yuma, AGL)
- Highly configurable navigation message content
- Atmostpheric perturbation models (Klobuchar, NeQuick)
- Satellite antenna configurability (antenna diagrams)
- Multipath : Statistical model, User-defined, 3D Model

GNSS Signal Generator

- Vulnerability simulation such as multipath, interferences, spoofing
- Multiple simultaneous signal generation (two trajectories, four antennas)
- Support for different RF targets: from high-grade (VST 1st and 2nd generation) to entry-level (USRP-RIO)

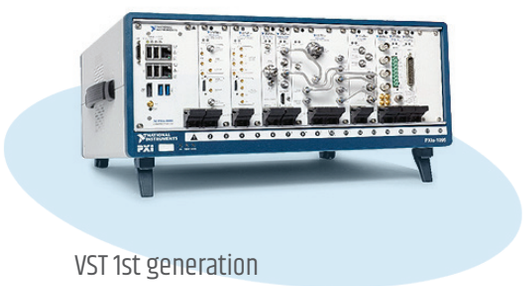
StellaNGC Simulation Performances

- Input trajectory simulation setpoint rate : up to 1 kHz
- Accuracy
  - Pseudo-range : 1.5 mm
  - Pseudo-range rate : 0.3 mm/s
  - Frequency (@L1) : < 10 Hz
  - Interchannel bias : null
- Mobile Trajectory
  - Height : 50 km max
  - Velocity : 1 750 000 m/s max
  - Velocity resolution : 0.01 m/s
  - Acceleration : 4576 m/s² max
  - Acceleration resolution : 0.01 m/s²

StellaNGC Hardware Platforms

NATIONAL INSTRUMENTS Gold Alliance Partner

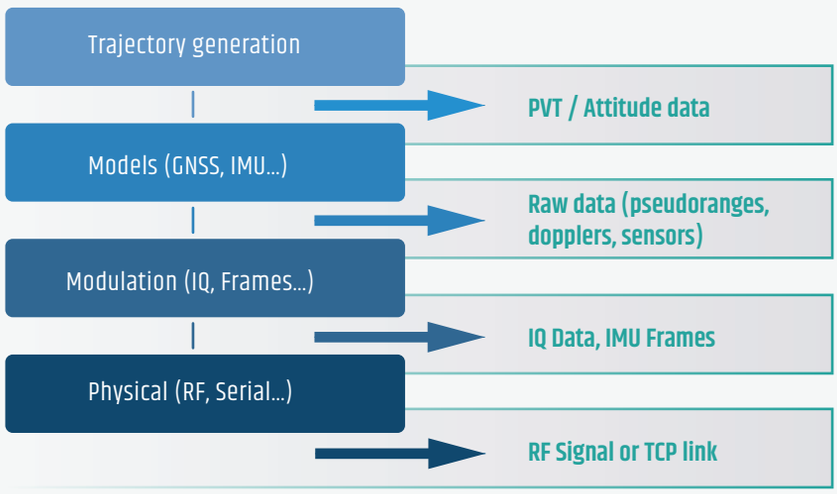
VST 2nd generation



VST 1st generation

USRP-RIO

Modular software : « it's all about the layers »



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