



GSG-7: The Newest Turnkey Solution for the Skydel GNSS Simulation Engine

01

Agenda



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Customer Experience

Marketing Manager

Orolia

What is the GSG-7?
Orolia Family of Simulators
Architectural Design
Applications
Resources
Q&A



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What is the GSG-7?

WHAT IS THE GSG-7?

OROLIA FAMILY OF SIMULATORS

ARCHITECTURAL DESIGN

APPLICATIONS

RESOURCES

Q&A

Shared software-defined benefits and interoperability:

- Easy configuration with intuitive UI and automation
- Supports all major global constellations & frequencies
- Advanced signal customization and scenario creation
- Modify variables and parameters in real time
- Integrate interference with no additional hardware
- IQ file generation
- 1000Hz simulation iteration rate
- Comprehensive API (Python, C#, C++, LabVIEW)
- Record and export user interactions as Python script



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What is the GSG-7?

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High Performance and Capability Made Easy

GSG-7 delivers the highest standard of GNSS signal testing in a cost-effective, easy-to-use, turnkey form factor supporting the growing need of location aware applications and systems that require navigation or timing.

KEY FEATURES

- Small size – 2U Rack-Mountable or Bench Top
- In-field software upgradability
- All MF/MC Signals via Composite Port
- All-in-view satellites simulation
- Low-latency HIL
- Live Sky Time Synchronization
- On-the-Fly Scenario Reconfiguration
- Flexible licensing



Orolia Family of Simulators

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The Orolia Family of GNSS Simulators

From essential to advanced, we have the right solution for your application and your budget.



GSG-5/6

Essential GNSS Simulator for Smart Applications

- StudioView scenario generation software
- All GNSS constellations supported
- Up to four frequency bands in a single chassis
- Up to 64 simultaneous signals
- Hardware-in-the-loop
- Premade scenarios included
- Test suites for automated testing
- Small, portable form factor



Skydel Simulation Engine

Powers Orolia's turnkey simulators, GSG-8 and BroadSim. Can be purchased alone to run on your own specific hardware

- 1000Hz simulation iteration rate
- Scalable to multiple GPUs
- Intuitive UI and automation
- Comprehensive API (Python, C#, C++, LABVIEW)
- Advanced jamming and spoofing
- IQ file generation and playback
- All-in-view simulation



GSG-7

High Performance and Capability Made Easy

- Small Size – 2U Rack Mountable or Bench Top
- In-Field Upgradability
- All M/F/MC Signals via Composite Port
- All-in-view satellites simulation
- 5000Hz simulation iteration rate
- Low-latency HIL
- Live sky time synchronization
- On-the-fly scenario reconfiguration
- 6 Degrees of Freedom (DoF) receiver trajectories
- Flexible licensing



GSG-8

Advanced GNSS Simulator for Critical Applications

- Encrypted EU signals
- 1-4 RF Outputs
- Rack mounted, 4U
- High-end performance Precision, resolution, motion
- Multi-constellation
- Multi-frequency
- Multi-vehicle
- Wide dynamic range Up to 0dBm transmit power
- High Dynamics and Aerospace features



GSG Anechoic

GNSS Simulator System for Over-The-Air Testing in an Anechoic Chamber

- Tests CRPA/multi-element antennas and entire PNT systems.
- 32 RF outputs and 16 dual frequency antennas
- Automatic antenna mapping
- Automatic time delay and power loss calibration
- Calibrate your entire system in minutes



GSG Wavefront

GNSS Simulator System for Conducted Testing

- Tests the jamming and spoofing resiliency of CRPA and multi-element antenna electronic systems
- Real-time automated phase calibration
- Generate spoofers, jammers, repeaters and alternate PNT sensors with just a few clicks
- Scalable from 4 to 16 elements
- Phase coherence: 1% σ
- High dynamic range
- Calibrate your entire system in minutes

Powered by the Skydel Simulation Engine

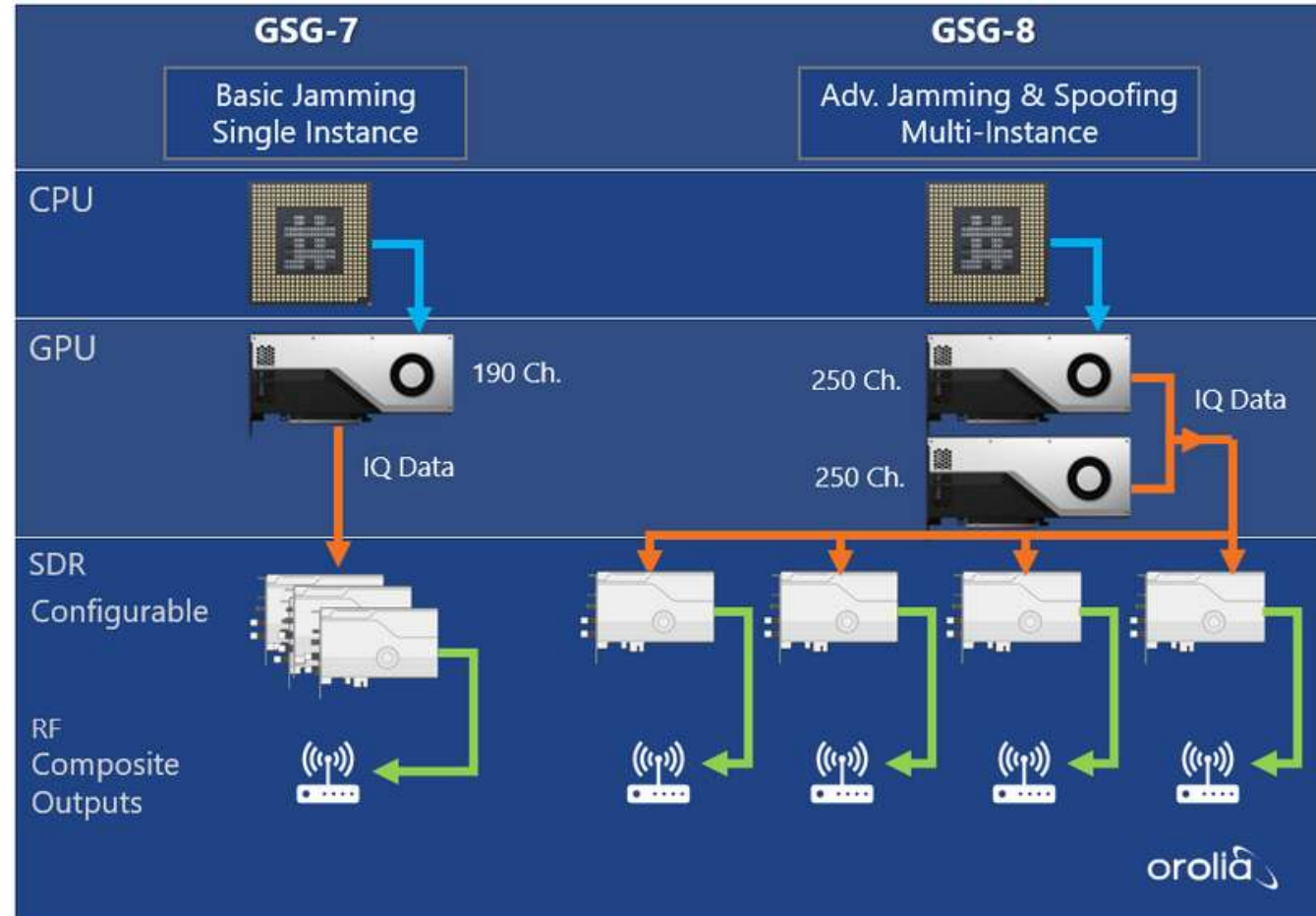
05

Architectural Design

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Skydel Simulation Engine

- Supports all Constellations & Frequencies
- Skydel application not dependent on specific hardware:
 - Features and performance mostly defined by Skydel, not hardware
 - SDR not dedicated to specific task, i.e.:GNSS, jamming, spoofing, etc.
 - GPU's performance can be shared & optimized
- Scenarios can be shared between different platforms
- All-In-View "User Defined" vs channels "Hardware Defined"



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Architectural Design

WHAT IS THE GSG-7?

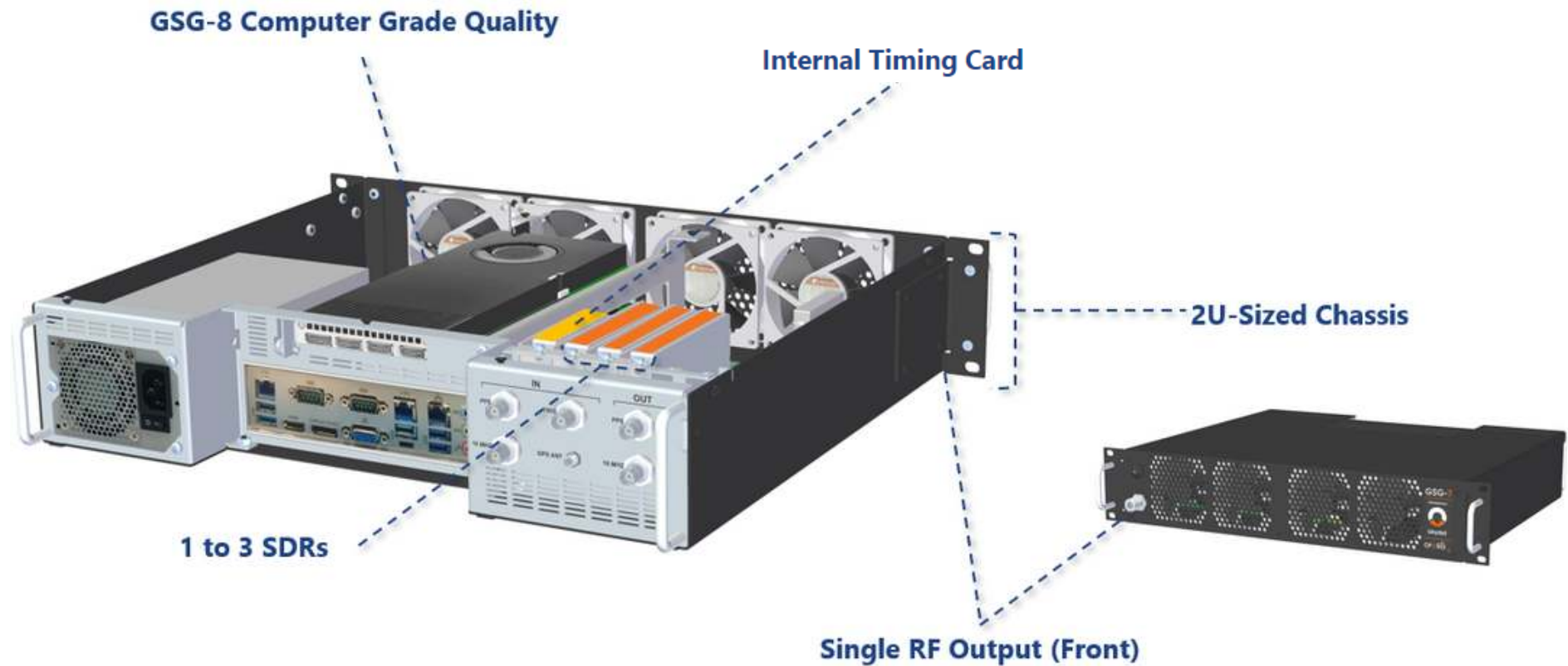
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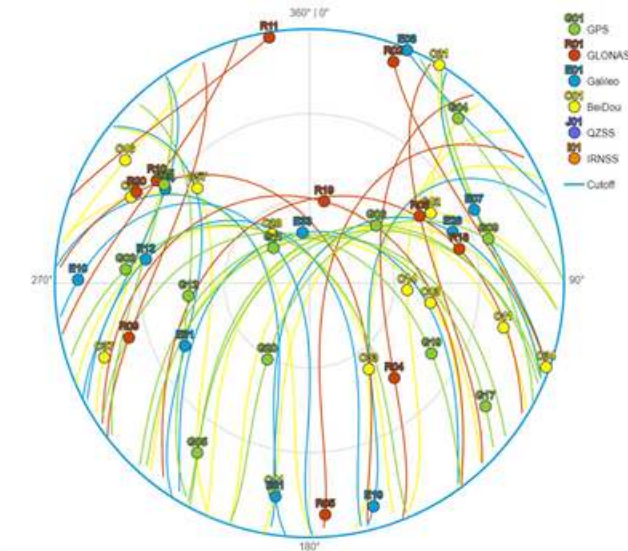
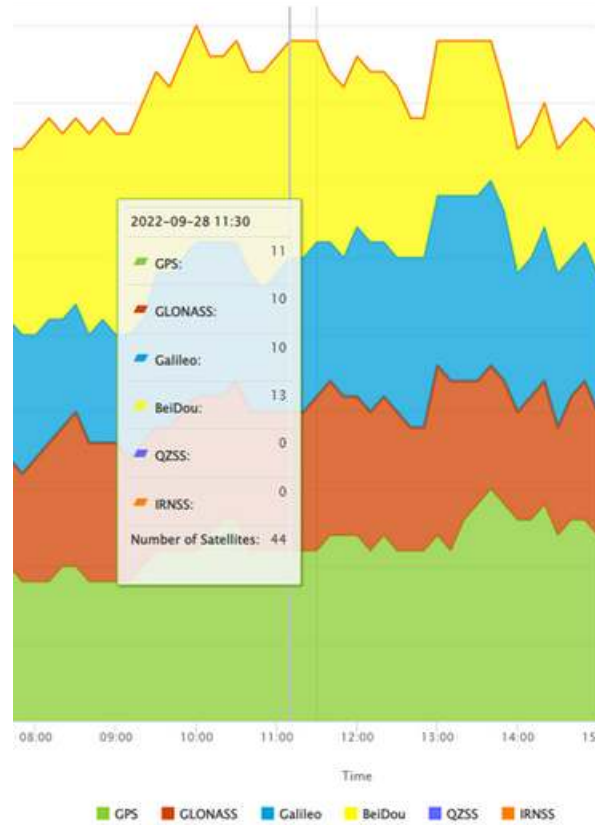
Q&A



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All-in-View Satellites

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Date: 22-09-28 11:30
Location: N43, W77, 500m
Elevation Cutoff: 0 degrees

- Each satellite transmits more than 1 signal.
- Multipath, interference, or SBAS are additional signals not considered.
- With Skydel, you purchase the signal and have access to all of the satellites in that constellation. No need to purchase channels or channel banks.

Constellation	# of Signals per Sat	Sats	Total Signals
GPS	4	11	44
GLONASS	3	10	30
Galileo	4	10	40
Beidou	5	13	65
			179

*The quantity of satellites generated by Skydel is only limited by the compute capacity of the GPU(s)

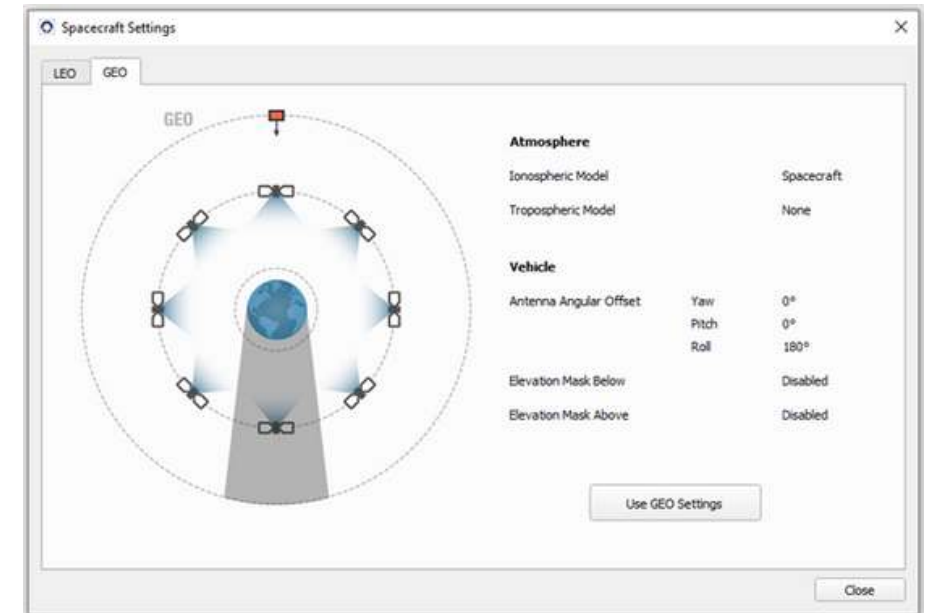
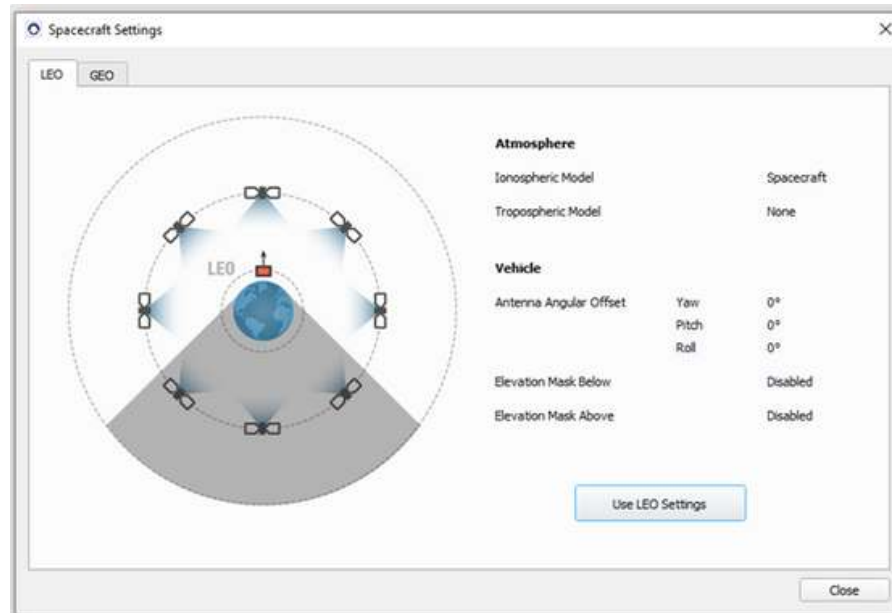
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GNSS Simulation for Space Launch

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Take full advantage of Skydel's space simulation features:

- *Space Vehicle Orbital Trajectory Editor*
- *Spacecraft Atmospheric Condition Simulation*
- *High Dynamic Trajectories (1000Hz update rate)*
- *GNSS Constellation High Signal Count*
- *GNSS Satellite Antenna Model*



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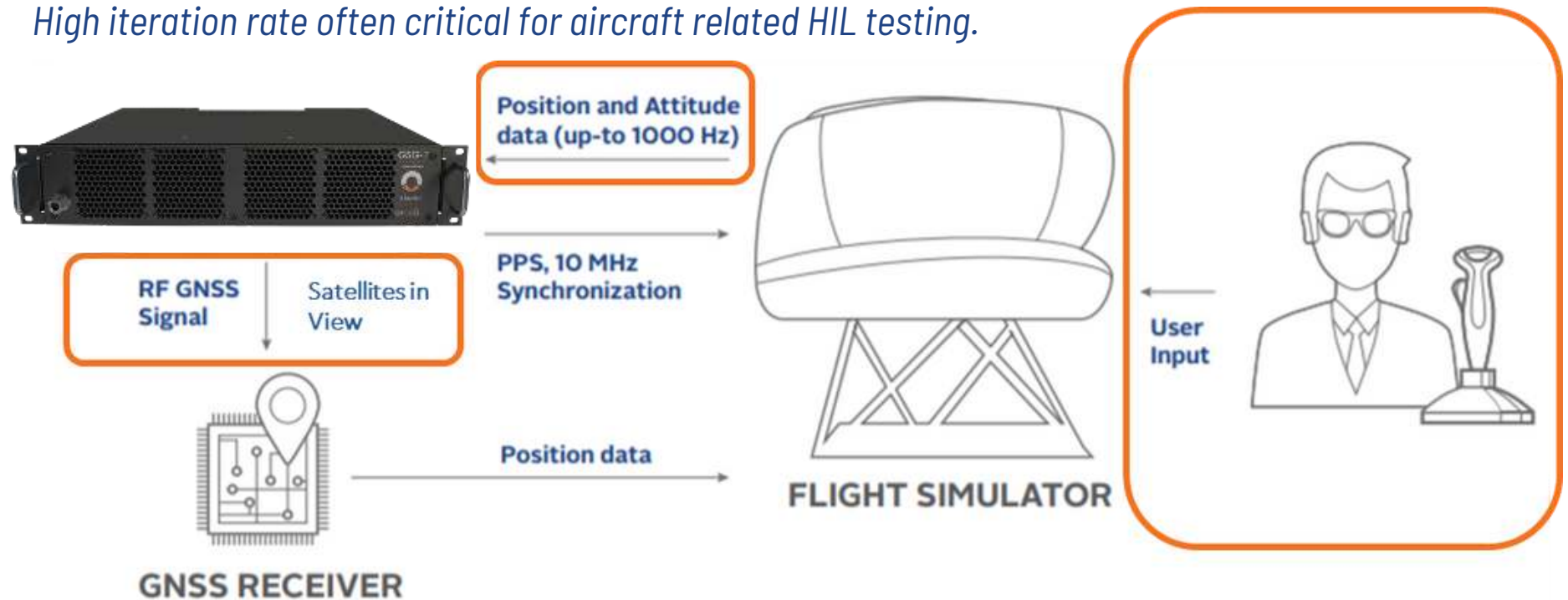
Flight Simulation

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HIL Setup for flight simulation and pilot training.

- Aircraft position and attitude information sent real-time to GSG-7 simulator.
- GNSS simulator (GSG-7) outputs GNSS signal data to aircraft.
- Aircraft cockpit displays realistic data and allows for flight test while on the ground.

High iteration rate often critical for aircraft related HIL testing.



Skydel - RTCM Messages Plug-ins

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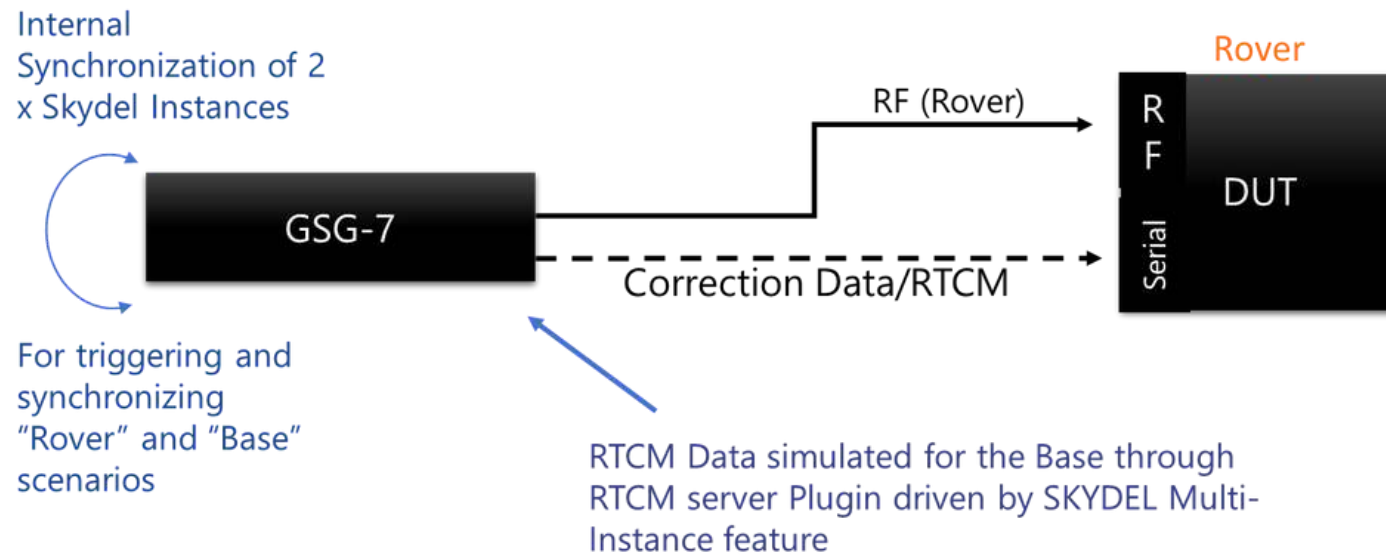
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Best Test Methodology for Testing Rover(s) Only

- Skydel powered GSG-7 GNSS Simulator
- RTCM messages automatically calculated based on a virtual base station
- RTCM messages sent to Rover (receiver) via COM port or saved in a file.
- Built-in NTRIP Server/Caster

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RTK Plug-In

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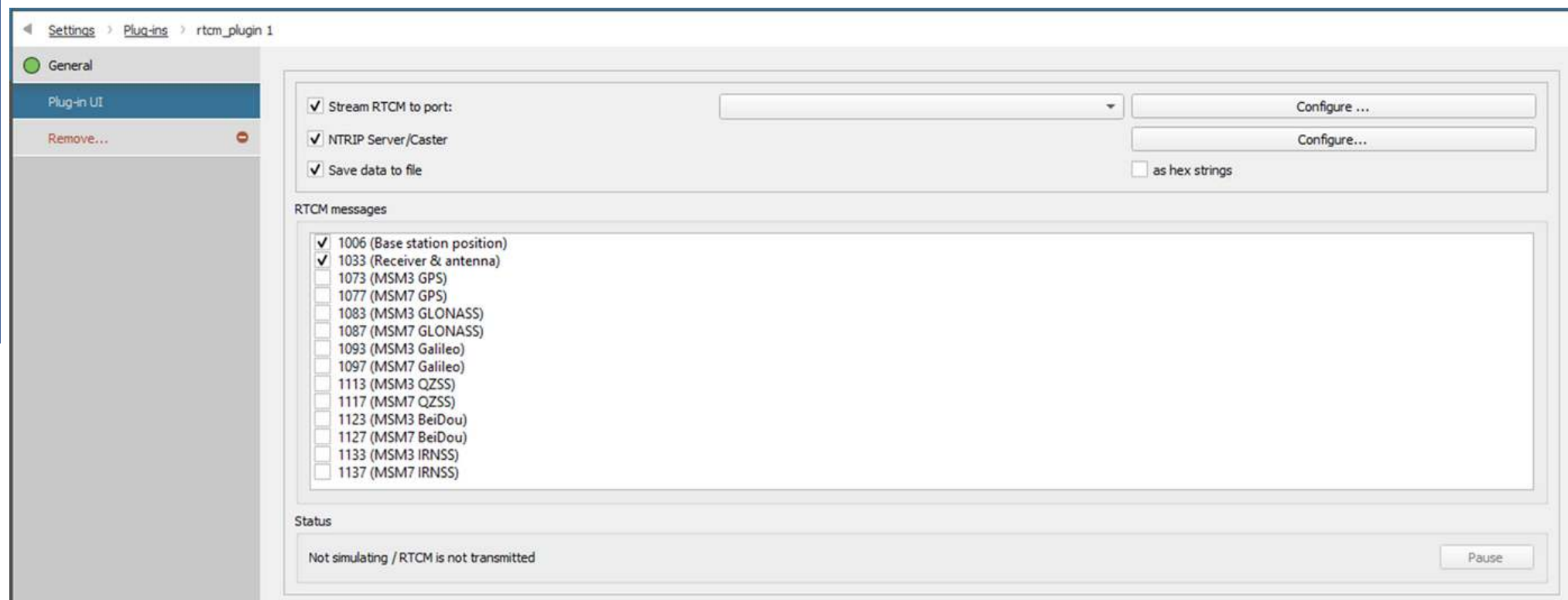
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Resources

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- **Product Hubs at start.oria.com**
 - **Support Tutorials**
 - **FAQ's**
- **User Forum at learn.oria.com**
- **Web Resources at oria.com/resources**
 - **Blogs**
 - **Webinars**
 - **Use cases**
- **Knowledge Base at oria.com/support-documents**
 - **Datasheets**
 - **User Manuals at manuals.oria.com**
 - **Quick Start Guides** (shipped with the product and online)
 - **Application Notes**
- **GitHub at skydel.gitbook.io**
- **Skydel Certification**
- **Our Team of Experts at oria.com/support**

Questions?

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