IMU Modeling and Simulation

CAST NAVIGATION

Dynamic GNSS/INS Simulation Systems

Provide Dynamic INS and GNSS Signals

CAST Navigation's INS systems provide high rate inertial data with exceptional fidelity, supporting the integration and testing of today's complex EGI and GNSS/INS navigation systems. Our systems are designed for optimal performance when the inertial sensor and GNSS receiver are loosely, tightly or ultra-tightly coupled.

CAST Navigation's global clients include military, industrial and commercial laboratories, providing dynamic INS and GNSS signals necessary for development, integration and testing of current navigation systems and platforms.

For 40 years, CAST has continued to play a critical role for clients in the research and design of emerging technologies, collaborating with many different IMU manufacturers in the development and refinement of laboratory test interfaces. CAST Navigation's systems interface with most types of INS protocols and data rates, and will customize an INS interface to meet specific requirements and testing needs.

System Features

- Systems are designed to provide precise dynamic signals for stimulation of EGI and GNSS/INS devices in a laboratory environment
- Provides an accurate synchronized simulation of navigation signals to loosely, tightly, and ultra-tightly coupled signals to stimulate EGI and GNSS/INS systems
- Operates as a stand-alone system or can be integrated into a laboratory environment to provide stimulus, based on 6-DOF trajectory data received
- Customizable and expandable solutions allows configuration of your GNSS/INS system to meet current and future requirements

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System Specifications

Inertial Platform Types

Strapdown
Locally-Level Gimballed
Space Stabilized

Maximum Dynamics

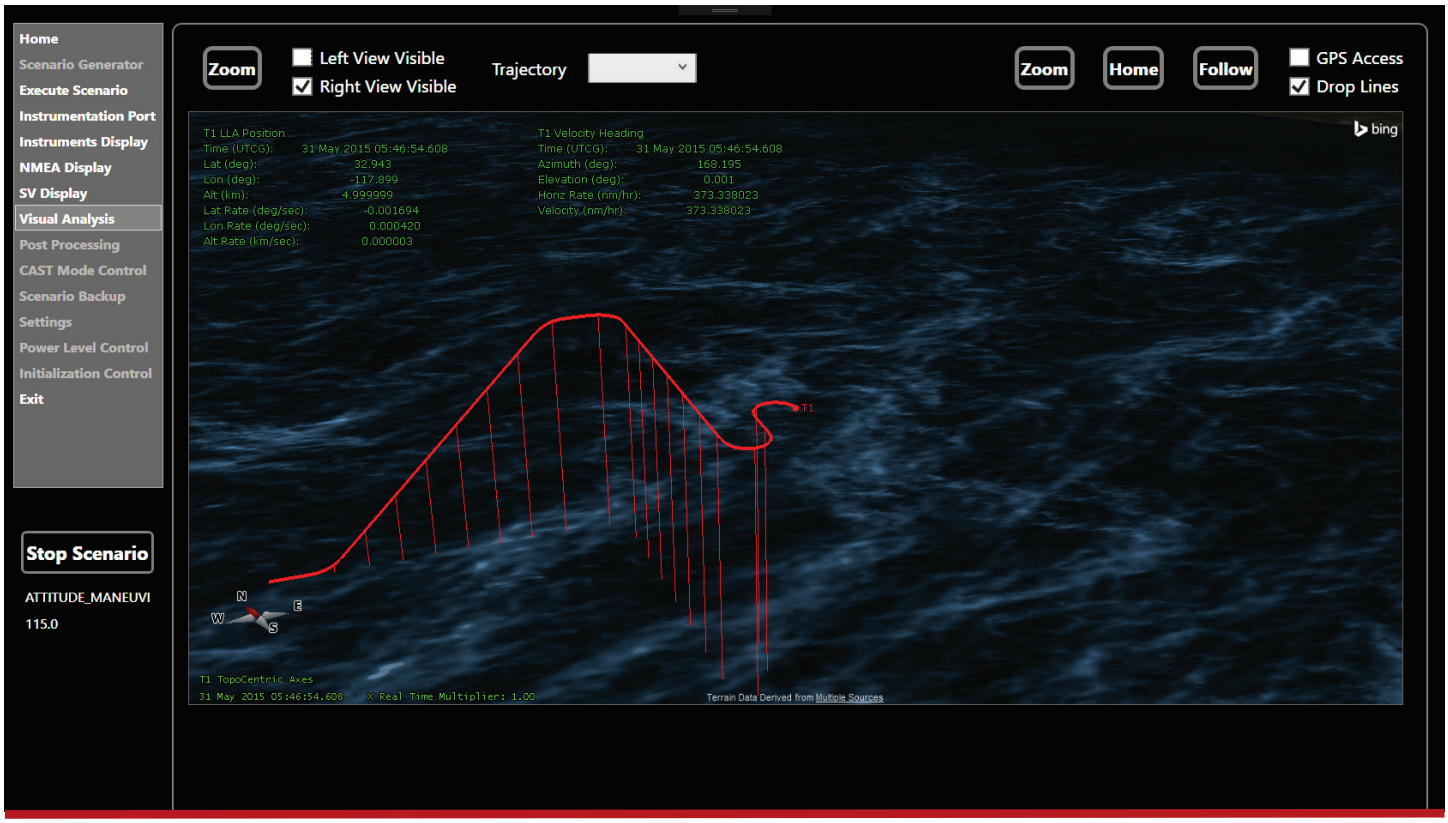
Velocity:	> 60,000 m/s
Acceleration:	± 150,000 m/s^2
Jerk:	± 150,000 m/s^3

Maximum Inertial Rates

Angular Rate:	15π rad/s
Angular Acceleration:	2900π rad/s^2
Velocity:	±120,000 m/s
Acceleration:	±192,600 m/s^2
Jerk:	510 g/sec (±890,400 m/s^3)
Angular Rate:	15π rad/s
Angular Acceleration:	2900π rad/s^2

IMU Interface Types

LN-100G, LN-200, LN-251, LN-260, LN-270
H-764G, HG-1700, HG-1900, NAV-100
SD500
STANAG 4572
Customized SDLC Communications
Customized RS-422 Communications



3D view of an aircraft flying a simulation with red drop lines under the aircraft's trajectory.

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