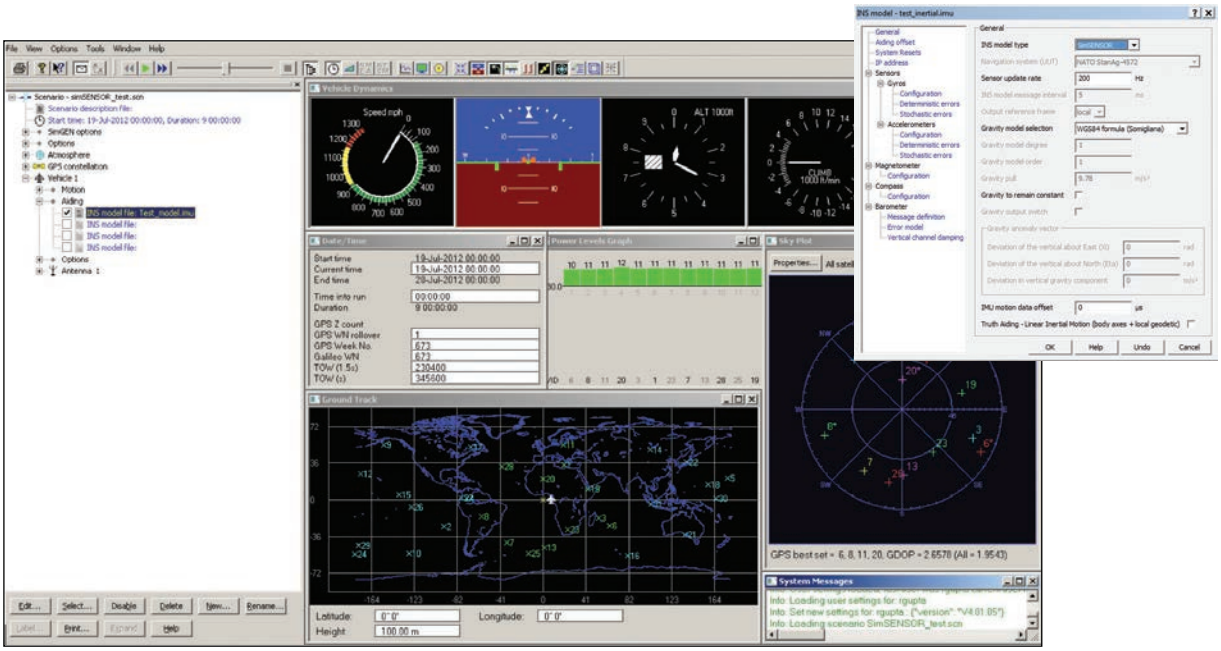
# SPIRENT SimSENSOR™
## MEMS SENSOR SIMULATION

**A unique R&D tool for performance testing of sensor fusion in MEMS inertial and Multi-GNSS navigation systems.**

## Key Features

- **MEMS Sensor modelling**
  - Simulate up to four streams of data from sensors such as accelerometers, gyroscopes, magnetometers, compasses and barometers
- **Comprehensive**
  - Generate sensor outputs consistent with any simulated trajectory
  - Library of pedestrian trajectories including common ‘gestures’
  - Noise and errors can be introduced on an individual axis basis
  - Sensor error model with deterministic and stochastic errors
- **Range of MEMS noise profiles can be simulated**
  - MEMS sensor Allan variance noise model
  - Magnetometer noise model
  - Barometric data model
  - Digital compass model
- **Full flexibility**
  - Designed to meet the specific requirements of commercial device R&D
  - Builds on your existing Spirent GSS6700 or GSS8000 simulator
- **Ease of use**
  - Delivery of data as UDP stream over Ethernet
  - Options available for alternative delivery mechanisms including I2C and smartphone OS’s



SimSENSOR™ offers complete GUI control for defining sensor parameters including sensor noise and errors such as bias and drift

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## MEMS SENSOR SIMULATION

Over a period of time, personal devices (for example smartphones and tablet computers) have incorporated GNSS receivers to provide position and navigation capability; however, they cannot always receive GNSS signals when the device enters a tunnel or building where GNSS signals are weak or denied.

Increasingly now, personal devices contain sensors (such as MEMS accelerometers and gyroscopes) that enable detection of a full six degrees-of-freedom in the inertial frame. To obtain more accurate positioning for location-based services and navigation, GNSS chipset manufacturers combine GNSS navigation with these sensors. The combination of these sensors is known as “sensor fusion” or “signals of opportunity”.

SimSENSOR™ enables sensor fusion algorithm testing in the lab by presenting Multi-GNSS and simulated MEMS sensor outputs to the bench environment. The key benefit of this approach is that the stimuli to the navigation algorithms, in the form of GNSS pseudo range measurements made by the GNSS receiver under test and the emulated linear delta velocity and angular delta-theta inertial outputs amongst other sensor outputs, are under user control in the lab and are extremely repeatable. This allows fine-tuning and debugging of the navigation algorithms across a range of operational test scenarios.

SimSENSOR™ works in conjunction with Spirent’s popular GSS6700 or GSS8000 Multi-GNSS platforms by simulating MEMS sensor outputs on a common trajectory with the simulated GNSS signals. SimSENSOR™ is compatible with both SimREPLAYplus and SimGEN software and runs on the same PC.

The simulated MEMSs sensor outputs include representative noise and errors (bias/drift) and are outputted over the UDP/IP packets to the unit under test as shown in the architecture diagram below. Trajectories that include representative human motion gestures are also included with SimSENSOR™.

Product Specification (MS3086) is available on request Performance figures and data in this document are typical and must be specifically confirmed in writing by Spirent Communications plc. before they become applicable to any particular order or contract.

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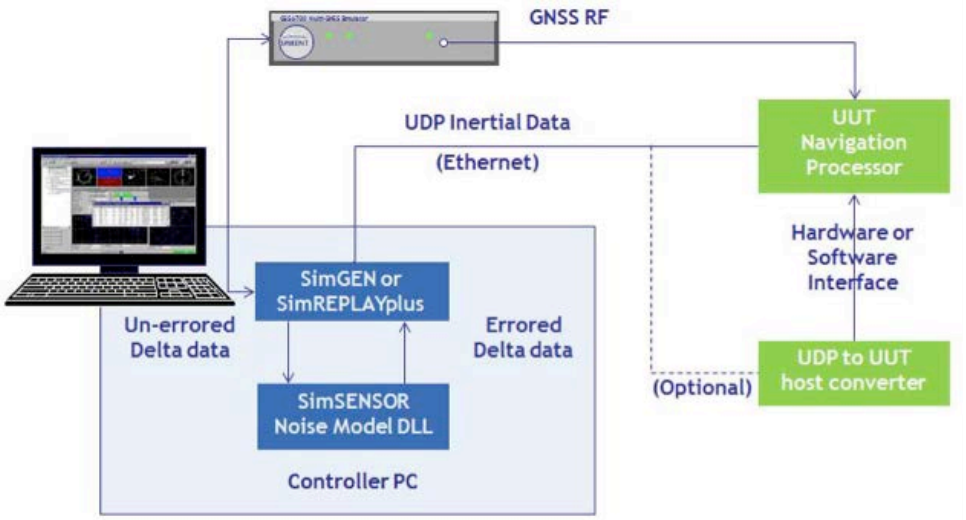


SimSENSOR™ architecture

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