

## DATA SHEET

Operating Modes	Real Time / Post-processing Single / Dual Frequency
Input Formats	NTRIP (RTCM through internet) RINEX 2.X/3.X Novatel Septentrio GMV SRx-10 SISNeT EMS (EGNOS)
Coverage	Local and Regional
Supported GNSS Core Constellations	GPS GLONASS Galileo
Supported GNSS Augmentations	RAIM SBAS L1 SBAS L1/L5 (DFMC draft) DGPS
Supported Standards	ICAO GNSS SARPS RTCA/DO-208 (GPS MOPS) RTCA/DO-229C&D (SBAS MOPS)
Supported Service Levels	LPV-200 APV-I&II CAT-I NPA Departure En-route Oceanic Custom
Supported Analysis	- Accuracy / Navigation System Error Integrity - Continuity of Service - Service Availability - Dilution of Precision (DOP) - ICAO PBN/RNP Compliance - Service Area Extrapolation

## Product info website at:

<http://www.gmv.com/en/Products/magicGEMINI/index.html>

## CONTACT

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# *magic*<sup>®</sup> GEMINI

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# THE COMPLETE GNSS OPERATIONAL PERFORMANCE MONITOR AND ANALYSIS SYSTEM

# FOR THE AVIATION COMMUNITY



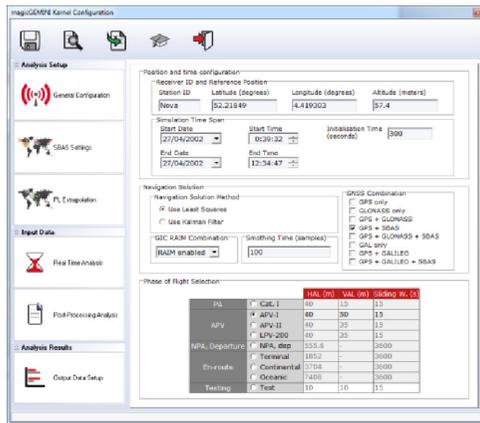
## MOTIVATION

Air Navigation Service Providers, airspace users and aviation authorities need to evaluate the performance of GNSS systems and their augmentations. This is a necessary step to define the conditions under which GNSS systems can be operationally used and which operations can be supported. Once in operation, real-time monitoring of the GNSS performance becomes necessary in order to detect potential service degradations and timely warn the air traffic management and airspace users.

In response to these needs and as a result of 25 years' experience and expertise in GNSS, GMV has developed **magicGEMINI**, a state-of-the-art, operational GNSS performance analysis and monitoring tool specifically designed to meet the needs of air navigation service providers and airspace users.

## MAIN FEATURES

**magicGEMINI** design is multi-constellation oriented, since it supports performance analyses for operational navigation based on GPS, GLONASS, Galileo and their combinations, as well as RAIM and SBAS augmentations.

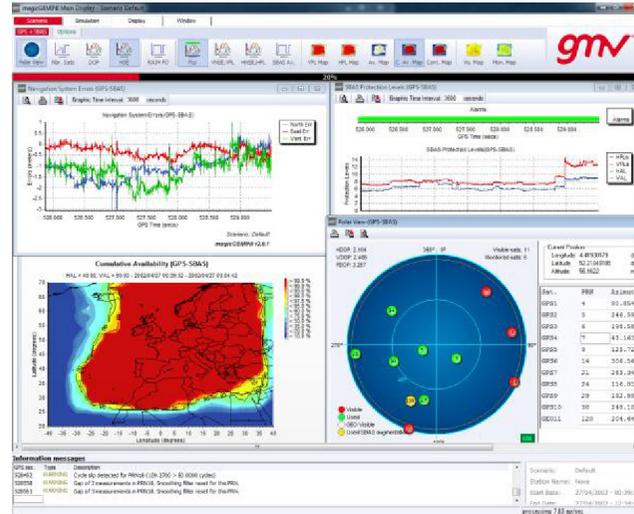


**magicGEMINI** processing is fully compliant with international aviation standards like ICAO GNSS SARPs, RTCA/DO-208 (GPS MOPS) and RTCA/DO-229 C&D (SBAS MOPS) in order to accurately reproduce the expected air navigation user performance. In addition, **magicGEMINI** implements the latest version of the draft ICD for L17L5 DFM.

**magicGEMINI** can be operated in two modes: real-time and post-processing. The real-time mode allows monitoring the GNSS system performance over a given airspace and automatically generate warnings and alarms upon service degradation for any of the supported operations. The post-processing mode can be used to a-priori evaluate the suitability of GNSS to support operations in a given airspace or flight procedure starting from historical recorded data.

**magicGEMINI** includes a complete set of built-in analysis modules to properly evaluate service quality and a wide variety of individual key performance indicators like satellite geometry, accuracy, integrity, continuity and service availability. ICAO PBN/RNP compliance analysis is also supported.

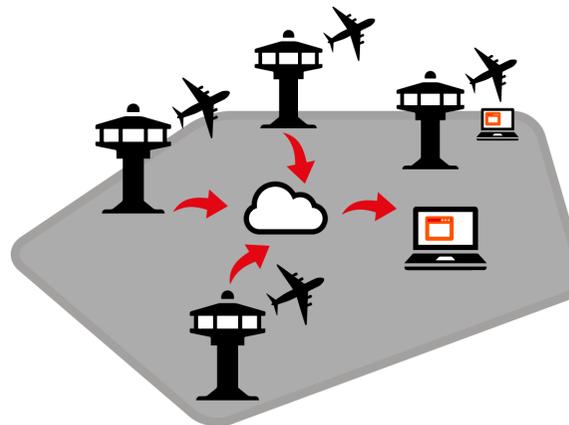
The different performance analysis can be run either locally at given locations such as airports, or regionally in larger areas like TMAs or FIRs.



Some of the analysis modules have been specifically designed to investigate the causes and effects of potential service degradation.

## HOW DOES magicGEMINI WORK?

**magicGEMINI** can process data from a network of GNSS receivers in order to analyze and monitor the navigation performance available in a configurable airspace, keeping track of service compliance both in real time and in post-operational processing. The tool supports different data formats, including open formats like NTRIP, RINEX, SISNeT, as well as binary formats from different receiver manufacturers.



**magicGEMINI** implements a built-in GNSS receiver processing module. This module processes the observations coming from the network of receivers and computes reference navigation solutions that are then used as input to the performance analysis and monitoring tools.

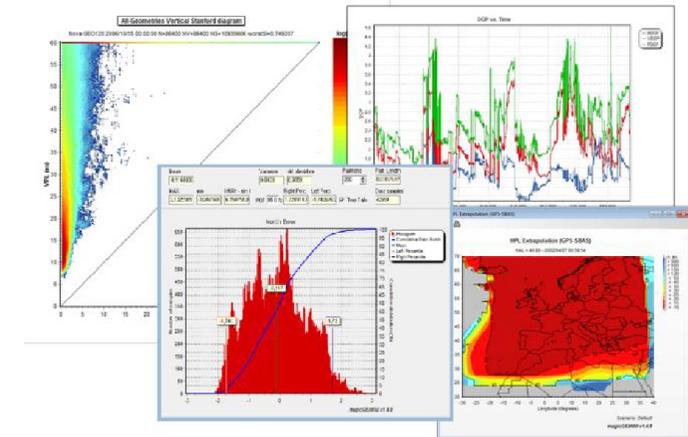
## KEY ADVANTAGES

**magicGEMINI** is a very robust and reliable solution, designed from an operational service provision perspective. Results obtained with **magicGEMINI** have been proven fully consistent with those obtained with certified GNSS avionics.

Engineering processes follow in the development of the tool together with the extensive documentation available allow **magicGEMINI** to be ESARR6 certifiable.

The modular architecture of **magicGEMINI** offers multiple possibilities to customise it to meet the specific needs of particular users. Additional analysis modules and functionalities can be added easily upon request.

Special effort has been placed in the design of the user interface, what makes **magicGEMINI** a user friendly, intuitive and operation oriented tool. Multiple configuration capabilities are provided to the user.



GMV offers the possibility to contract an Advanced Expert Support Service with **magicGEMINI**, under which GMV GNSS experts can produce additional detailed analyses and reports. GMV can also provide training and consultancy services to assist in the planning and implementation of GNSS based operations.