

GRACE – ATC GNSS



Leonardo ATC GNSS (GRACE) is a user-friendly workstation, suitable for ATC Controllers and Ground Operators, providing monitor of GNSS performances (e.g. GPS, EGNOS, Glonass, Galileo, etc.) over the controlled airspace.

GRACE is a flexible and modular system that integrates Satellite Navigation in the ATC world visualizing collected information through an efficient and user-friendly human machine interface.

GRACE provides information for the generation of GNSS NOTAM compliant with ICAO and EUROCONTROL Standards:

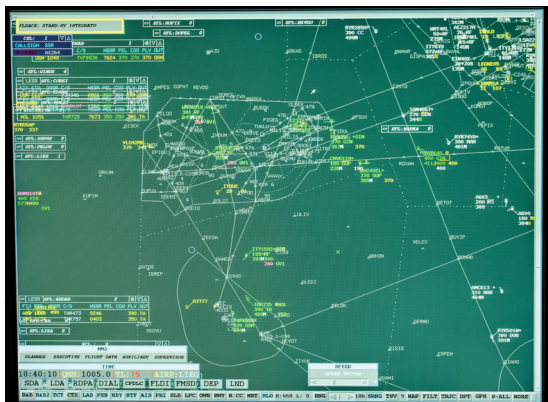
- ICAO-Annex 10, Vol. I. 5th Edition of Volume I, July 1996 and Amendments
- RTCA-MOPS for GPS/WAAS for the airborne equipment, RTCA/DO229D
- FARRE, EGNOS ICD for ATC interface, 2001

MAIN COMPONENTS AND FUNCTIONALITIES

GRACE supports specific needs of Air Traffic Controllers (e.g. radar, planner assistant, operational supervisor), namely:

- Real time monitoring of GNSS performances in terms of integrity and accuracy of the Signal In Space (GPS, SBAS). The system also provides status of Satellite Navigation such to improve safety during the approach/landing phases of flight.
- Prediction of GNSS performances (VPL-Vertical Protection Level and HPL-Horizontal Protection Level) over any assigned ATC zone. The prediction module compares HPL and VPL to the protection level thresholds; when the predicted value exceeds the applicable thresholds for the specified flight procedure, a NOTAM is generated, validated, and sent to the NOTAM Authority Office.

The prediction service works autonomously and, optionally, on demand. The on-demand application works on specified requests from GNSS Operators who may set opportune configuration parameters and ATC sectors of interest.



GRACE can optimize En-Route flight providing information about GNSS performances, which grant a major support where radar coverage is not available. GRACE predictions in connection with flow management allow to estimate GNSS availability along the planned routes.

In Approach, GRACE allows integration of satellite navigation within the TMA, providing RNP values mapped over flight descending paths. In airport operational scenario, the application provides satellite navigation for taxi-routes and runways.

GRACE predicts the performance of a GNSS system in terms of integrity parameters, and provides Users with, among others, differential ranging errors, ionosphere grid, vertical error parameters, average local errors, user fix scattering.



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