

SATERA

Space-based composite ADS-B and multilateration system validation through scalable simulations

What is SATERA?

SATERA addresses the concept of a space-based composite ADS-B + E-MLAT system using ADS-B and MLAT receiving stations on board small satellites in low Earth orbits.

SATERA Aims

SATERA aims to design and validate a GNSS independent ATC surveillance system enabling the definition of integrity parameters for space-based ADS-B data improving the Air Traffic Security and Safety.

SATERA aims to be a key enabler to optimize air operations, mainly for long-haul flights over oceanic or uninhabited areas, allowing the reduction of greenhouse gas emissions, the increase of airspace capacity, safety and security. This translates into a series of specific objectives, namely:

SO1

Formulate the concept of operations of a reliable space-based surveillance system to provide composite ADS-B + E-MLAT surveillance from a constellation of small satellites in LEO orbits.

SO2

Develop an integrity estimator for the entire space-based ADS-B system.

SO3

Design and validate receiver system architecture models capable of receiving ADS-B messages and measuring, at least, the following combinations of parameters: TDOA+DFOA, TDOA+AoA, DFOA+AoA and TDOA+AoA+DFOA.

SO4

Develop a communication network architecture integrating the inter satellite link (ISL), the downlink (DL), and the ground subnetworks (GSN).

SO5

Develop and validate a communication network simulator capable of emulating the real-time traffic produced by up to a maximum of 225 aircraft.

SATERA aims to enhance European airspace sovereignty by fostering the provision of critical ATM services by European companies, enhancing the European industrial leadership on the ATC by the use of satellites and boosting the deployment of space-based ADS-B in Europe.

The SATERA team



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