

About ASTONISH

SESAR Exploratory Research project “Alternate Surveillance Technologies fOr iNnovative Solutions” (ASTONISH) develops innovative alternate surveillance solutions for ATM/ANS (Air Traffic Management/Air Navigation Services) and airport operations, increasing the future ATM/ANS system performance and safety and allowing for an increased level of automation and connectivity.

ASTONISH Solutions

Activities of the ASTONISH project focus on the following three challenging solutions:

- Alternate surveillance for ATM operations, i.e., ground-based systems for en-route and terminal areas surveillance,
- Avionics architectures for alternate surveillance, i.e., aircraft-based A-SUR technology, and
- Improved aircraft protection on ground, i.e., airport and aircraft-based surveillance sensing systems for ground operations.



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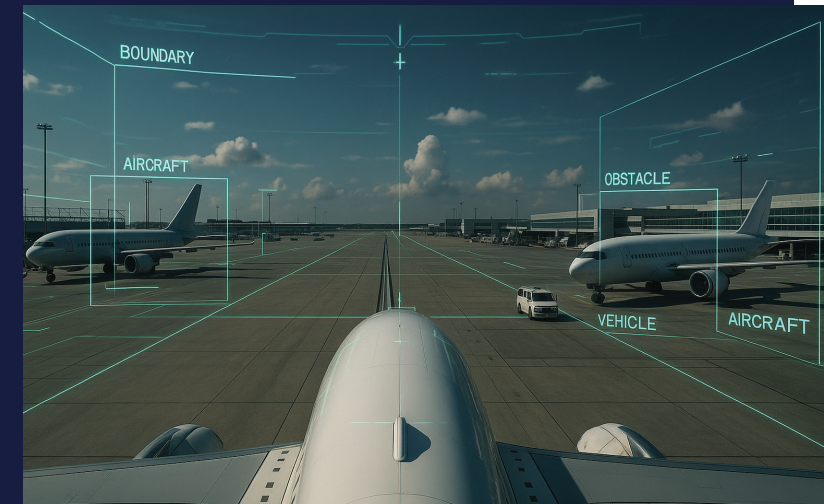
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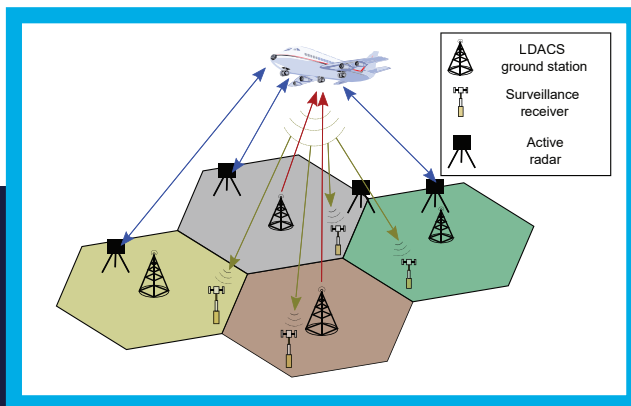
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Alternate surveillance for ATM operations

This solution aims at enhancing safety in aviation by improving the capacity and resilience of the surveillance infrastructure. This presents an alternative for areas with poor surveillance coverage but also serves as a backup solution in areas covered by traditional surveillance systems. The following ground-based non-cooperative surveillance alternatives are addressed:

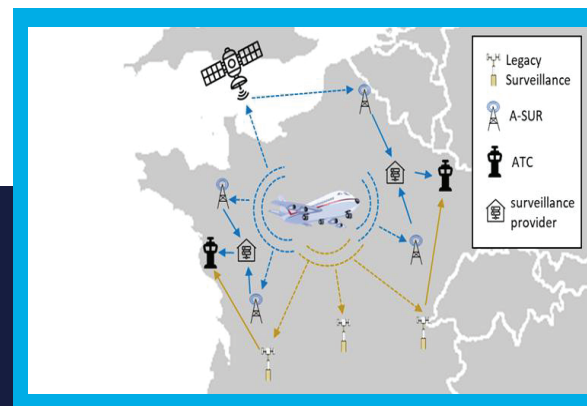
- the future aeronautical digital communication infrastructure LDACS by employing its transmitters as illuminators of opportunity to realize a passive multistatic radar for terminal maneuvering area (TMA) and en-route surveillance, and
- a distributed passive active radar system for TMA surveillance.



Avionics architectures for alternate surveillance

This solution exploits communication infrastructures for delivering the aircraft surveillance data to provide backup surveillance services, significantly improving the reliability of ATM systems.

The avionics architectures for alternate surveillance seek to explore and develop a solution to complement ADS-B (Automatic Dependent Surveillance-Broadcast) by offloading surveillance data over any available aircraft communications links, such as SATCOM, LDACS, VHF Data Link - Mode 2 (VDL-M2), 5G and LTE.



Improved aircraft protection on ground

This solution aims at investigating sensing technologies already successfully introduced in the last decade in the automotive industry such as cameras, radars and lidars, to improve aircraft safety on ground.

A systematic and thorough study and structured trade off analysis of promising non-cooperative sensing technologies deployable on ground and onboard aircraft to enhance surveillance systems capabilities can improve pilots and air traffic controllers situational awareness, and ultimately achieve higher measurable levels of safety during surface operations

