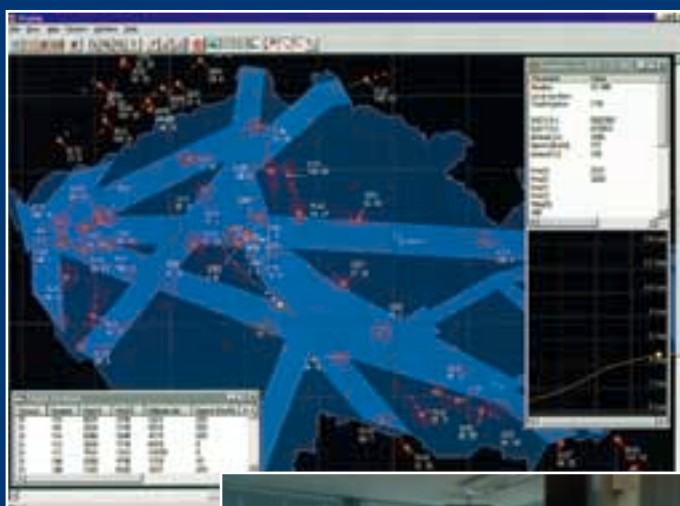


VERA-AP, P3D and ASCS Air Traffic Passive Surveillance Systems

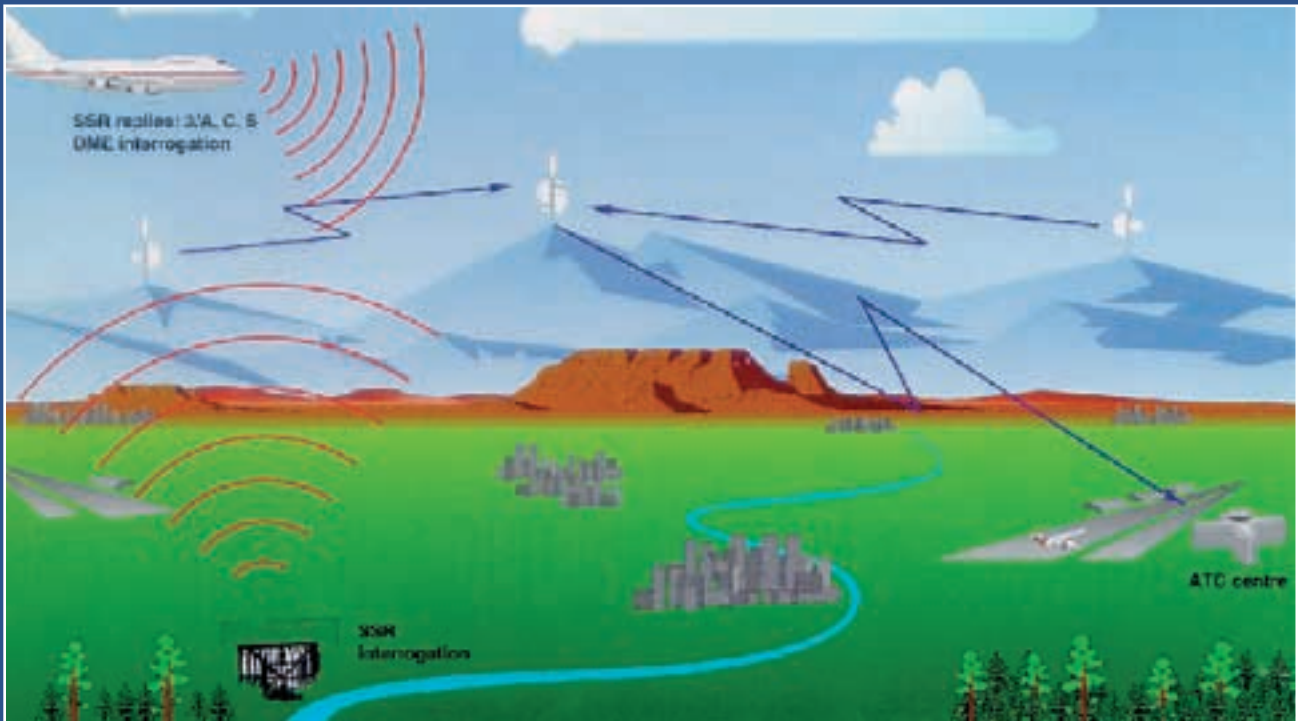
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VERA-AP Long-range Passive Surveillance System for Air Traffic Control

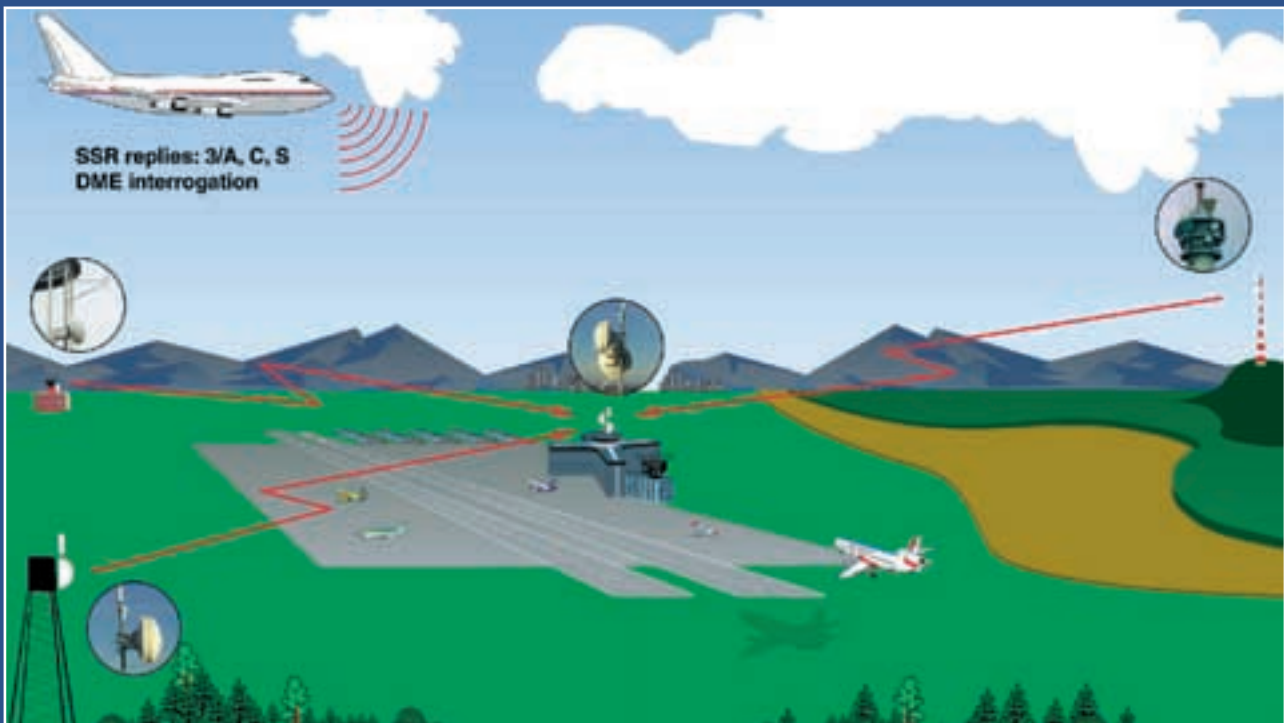


The system is designed for the identification, location and tracking of aircraft by passive (listening only) receiving and further processing of secondary surveillance radar (SSR) replies. It can be used for en-route terminal area surveillance, precision approach monitoring, airport surface movement monitoring, supervision of ATC surveillance system quality, or as back-up system for the ATC radar network. The operation of the system is based on the principle of multilateration time-difference-of-arrival (TDOA) and provides a very accurate real-time air picture in a wide surveillance area. The location of an aircraft is determined by reception of electromagnetic signals coming as pulse-coded replies from airborne SSR/SIF transponders by several properly located receiving stations. The location is updated every 5 seconds. The system consists of 3 receiving stations, 2 microwave links and 1 central processing station. Situation display and alternative power sources (wind generator and solar cells) can be delivered as an option. The system features low installation, operation and maintenance costs.

Basic Characteristics

Processed signals	SSR replies (1090 MHz): - Mode 3/A (ATC identification) - Mode C (barometric altitude) - Mode S (short and long replies) TACAN/DME (option)
Range	min. 400 km
Surveillance sector	min. 120°
Accuracy (X,Y)	within a range of 10 - 100 m (in relation to the distance of monitored aircraft)
Altitude accuracy	30 m (100 feet)
Tracking capacity	up to 300 aircraft simultaneously
Output data	X, Y, altitude, mode 3/A, C, S Track quality, Asterix format
Operating conditions	from -40° to +60°C
Crew	1 operator at a situation display

VERA-P3D Mid-range Passive Surveillance System for Airport Approach Area



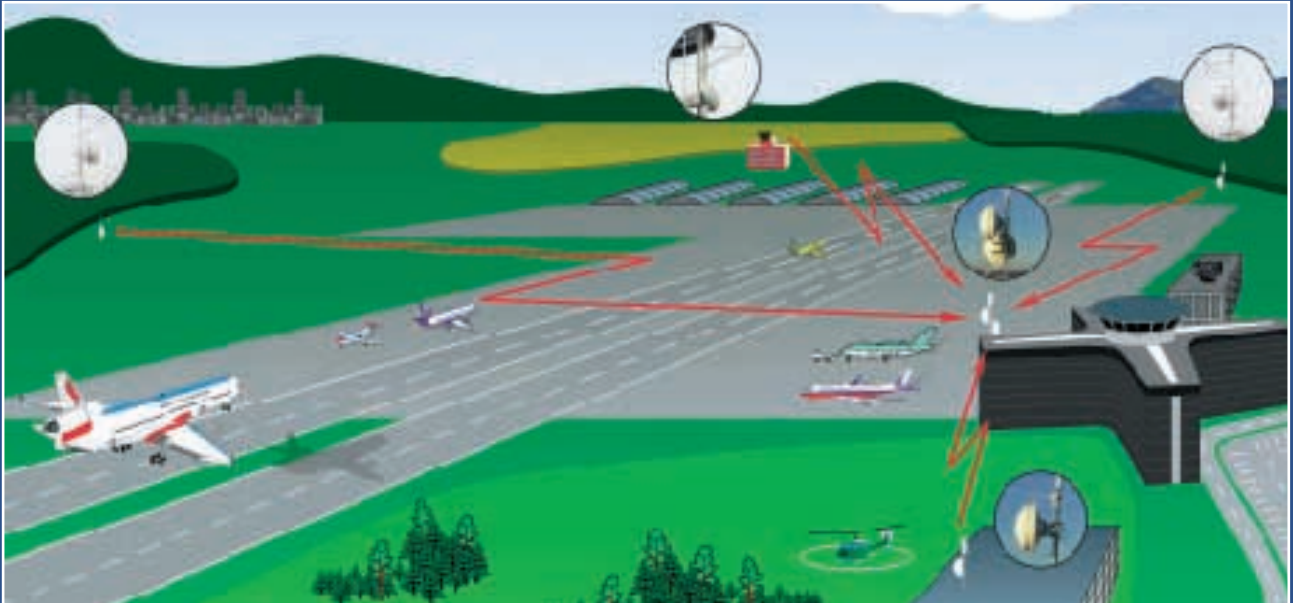
The system is designed for the identification and location of aircraft in the airport terminal area. Its operation is based on the principle of multi-lateration time-difference-of-arrival (TDOA) and enables 3-dimensional surveillance of the air traffic in the vicinity of an airport with its own measurement of the aircraft altitude. Especially at large airports with parallel runways the system provides controllers enough time to identify drifting aircraft on long distance and avoid evasive manoeuvres and missed approach. The system consists of 4 receiving stations, 1 central processing station and 1 situation display. It is being developed as a part of the European EUREKA project.

Basic Characteristics

<i>Processed signals</i>	<i>SSR replies (1090 MHz):</i> - Mode 3/A (ATC identification) - Mode C (barometric altitude) - Mode S (short and long replies)
<i>Range</i>	<i>min. 250 km</i>
<i>Surveillance sector</i>	<i>360°</i>
<i>Tracking capacity</i>	<i>up to 200 aircraft simultaneously</i>
<i>Accuracy (X,Y)</i>	<i>within a range of 10 - 100 m</i> <i>(in relation to the system geometry)</i>
<i>Operating conditions</i>	<i>from -40° to +60°C</i>
<i>Crew</i>	<i>1 operator at a situation display</i>

VERA-ASCS Airport Surface Passive Surveillance System

The system is designed for the identification and location of aircraft on the airport surface and in the airport vicinity. It enables to increase the airport throughput and improves safety of the air traffic in low visibility conditions. Its operation is based on the principle of multi-lateration time-difference-of-arrival (TDOA). The location of aircraft is updated every second. The system consists minimally of 4 receiving stations installed within the airport area and 1 central processing station.



Basic Characteristics

<i>Processed signals</i>	<i>SSR replies (1090 MHz):</i> <i>- Mode S (short and long replies)</i> <i>- Mode A/C (option)</i>
<i>Range</i>	<i>airport surface and 30 km surroundings</i>
<i>Surveillance sector</i>	<i>360°</i>
<i>Tracking capacity</i>	<i>up to 200 mode S emitters</i>
<i>Accuracy</i>	<i>3 - 10 m at the airport surface</i> <i>10 - 100 m in the approach area</i>
<i>Output data</i>	<i>X, Y, mode S 24 bit address, A/C, track quality</i>
<i>Operating conditions</i>	<i>from -40° to +60°C</i>
<i>Crew</i>	<i>1 operator at a situation display</i>

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