Indian airports are getting busier. So are flight corridors. As air traffic volumes grow, there is a real potential for chaos in the skies. Just as there is real potential of security dangers as movements increase, air separations become narrower and tall building crowd air space.

In the Indian context, the statistics of vertical and horizontal growth is staggering. Airports Authority of India owns and operates 97 of the 251 operational airports but the Civil Aviation Ministry aims to increase the number of operational airports to 500 within the next decade. The number of aircraft in the Indian skies is growing rapidly. Between 2009 and 2011, the total domestic passenger traffic in India has grown at a Compound Annual Growth Rate (CAGR) of over 17 per cent and if this growth were to continue, India is estimated to be among the top three aviation markets in the world by 2020.

Year on year, the New Delhi airport handles an additional 20 per cent passenger traffic each year. Indian carriers have placed orders for an additional 436 aircraft to cater to increasing domestic and international travel demand. Currently, six domestic carriers operate in the Indian aviation space with a total fleet of over 369 aircraft. The rapid expansion has not been equalled by an equal increase in flight management systems and people to man them, increasing thereby the risks in the skies. India today is facing a shortage of 1,200 Air Traffic Control (ATC) officers to meet the increasing air traffic.

Some of the answers lie in technologies such as Wide Area Multilateration which is

At Edinburgh Airport, the WAM system is providing surveillance of commercial, general aviation and helicopter traffic to a range of 60 nautical miles from the airport. NATS controllers are using the WAM surveillance to provide a separation service to aircraft within their Terminal Manoeuvring Area.

**New system to enhance flight safety**

With air traffic volumes growing rapidly in the country’s flight corridors, there is an urgent need to usher in new technologies like Wide Area Multilateration (WAM) that will reduce risks in the skies, writes Michael Sahlberg.

**Michael Sahlberg**

**VIRTUAL VISION:** An operator inside a Saab Sensis Remote Tower Centre. The use of the Wide Area Multilateration (WAM) system by the remote tower brings in a high degree of safety by providing an extra level of surveillance and tracking of all flights within 10 to 15 nautical miles of an actual tower. Co-founder Nick Drayton
being increasingly used to handle traffic and create more secure airports and air traffic management. Saab’s Sensis’ Wide Area Multilateration (WAM) system is a highly capable cooperative surveillance system and almost 100 sites worldwide have chosen the system to enhance safety, efficiency, capacity and cost savings through airport surface surveillance, wide area surveillance and airport surface management.

The Saab system uses multiple low-maintenance, non-rotating sensors to triangulate aircraft location based on transponder signals. This provides air traffic controllers with precise aircraft position and identification information regardless of weather conditions. With a higher update rate and greater positional accuracy than traditional radar, multilateration delivers effective surveillance for increased safety, capacity and efficiency of airspace and surface operations.

By employing advanced processing techniques, the multilateration system uses the minimal number of sensors for a less complex, lower lifecycle cost solution. Additionally, each multilateration sensor deployed by the Saab system supports Automatic Dependent Surveillance-Broadcast (ADS-B), providing an infrastructure that is ready for today’s surveillance needs and tomorrow’s avionics.

The Saab Sensis’ Wide Area Multilateration (WAM) system is now providing surveillance of flights operating in close proximity of the Lotte World Tower being constructed near Seoul Air Base, Korea, to Republic Of Korea Air Force (ROKAF) air traffic controllers. The system also employs the first operational deployment of conflict detection and alerting capabilities for a WAM surveillance system, further enhancing safety of flights.

The system is enhancing the safety of the tower by providing an extra level of surveillance, tracking all flights within 10 to 15 nautical miles of the tower. It uses Saab Sensis-developed conflict detection and alerting algorithms to provide ROKAF air traffic controllers with advanced warning of aircraft operating too close to the tower. The surveillance data and conflict alerts are shown on dedicated Saab Sensis WAM displays.

Similarly, at Edinburgh, Scotland’s busiest airport, Saab Sensis WAM is replacing Monopulse Secondary Surveillance Radar (MSSR). The system is providing surveillance of commercial, general aviation and helicopter traffic to a range of 60 nautical miles from the airport. NATS controllers at Edinburgh are using the WAM surveillance to provide a separation service to aircraft within their Terminal Manoeuvring Area.

Saab’s multilateration data link system combines transponder multilateration, Mode S data link and Traffic Information Service into one integrated package. Additionally, multilateration supports simultaneous reception of Automatic Dependent Surveillance-Broadcast (ADS-B) long squitter messages with no equipment modifications.

The system provides accurate surveillance and identification of all transponder equipped aircraft on the airport surface or in the air utilising both ADS-B and multilateration. It also supports industry standard Mode S data link services. The MDS system seamlessly accommodates aircraft equipped with Mode A/C, Mode S, Mode 3A, TCAS and 1090 Extended Squitter.

Multilateration provides Differential Global Positioning System (DGPS) accuracy on non-GPS equipped aircraft operating on the airport surface. It can be used to reduce runway incursions, maintain capacity in low visibility, optimise ramp and gate operations and decrease aircraft taxi delays. Additionally, multilateration has been proven to provide surveillance performance equivalent or better than standard secondary surveillance radar over both terminal and en-route areas. Used for air surveillance, multilateration can provide surveillance data equivalent to or better than rotating cooperative radar at a much lower life cycle cost. Furthermore, the distributed network of sensors used by the multilateration system enables flexible coverage that can conform to difficult terrain, providing surveillance where none was possible before.

Saab has been serving the global market for decades now and is committed to providing its customers world class defence equipment and products, designed and crafted as per their requirements.

(The author is Marketing Director, Saab India Technologies)