Users' perspective on Surveillance requirements

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Primary Surveillance Radar (PSR)

- PSR is the only surveillance method that provides position information without any signal from the aircraft or information from the flight crew or aircraft systems.
- The typical Max. detection range of dedicated terminal PSR systems is **60 NM**
- For most en-route PSR systems, the maximum detection range is **100 to 250** NM.
- This is a national security service, and its infrastructure cost should be borne by the State's national security budget and not by air navigation fees for civil aviation

IATA Position on PSR:

Do not support PSR deployment as a mean to surveil airborne civil aircraft.

User charges associated with future upgrades or new PSR installations should be removed.

Secondary Radar Surveillance (SSR) cont.

- SSR systems have a greater range than PSR systems, on the order of 250+ NM from the radar site.
- **Mode S** (Selective Addressing) Aircraft equipped with Mode S transponders are assigned a permanent and unique 24-bit ICAO address code. **Mode S radars** interrogate aircraft selectively and receive individual replies.
  - Improves quality and integrity of the detection, identification and altitude reporting,

Secondary Radar Surveillance (SSR)

- Mode S Enhanced Surveillance (EHS) , provide additional automatic reporting on aircraft. (Downlinked Aircraft Parameters [DAPs])
  - Selected Altitude
  - Roll Angle, True Track Angle and Track Angle Rate
  - Ground Speed
  - Indicated airspeed (IAS) and Mach-number
  - Magnetic Heading
  - Aircraft Vertical rate - barometric rate of climb / descent
  - Traffic Collision Avoidance System (TCAS) downlinked resolution advisories (RAs).

IATA Position on SSR:

Support SSR Mode S over SSR Mode A/C where radar must be established or replaced. ANSPs should make full use of their available Mode S capabilities, including information provided by DAPs if available.

Multilateration (MLAT)

- It is a technique where several ground receiving stations listen to signals transmitted from an aircraft; then the aircraft's location is mathematically calculated typically in two dimensions, with the aircraft providing its altitude. Aircraft position, altitude and other data are ultimately transmitted to an ATC automation system, both for terminal (MLAT)or en-route (WAM).
- Used for ATM surveillance or for surveillance of airport ground movements, for ADS-B backup (during equipage transitions) and RVSM height monitoring

IATA Position on MLAT:

- Where there is a lack of ADS-B avionics equipage, MLAT can be an alternative mean to meet specific surveillance requirements, such as being a gap-filler of SSR coverages or supporting airport ground movement operations.

Dependent Cooperative Surveillance

- IATA views ADS-B based on the **1090 Extended Squitter (ES)** data link as the most desirable form of surveillance. Surveillance based primarily on ADS-B should be used, as the next generation replacement to radar.
- Technologies reviewed include
  - Automatic Dependent Surveillance Contract (ADS-C)
  - Automatic Dependent Surveillance Broadcast (ADS-B) OUT, including space-based
  - Traffic Information Service Broadcast (TIS-B)

Automatic Dependent Surveillance Contract (ADS-C)

- ADS-C reports are sent without flight crew intervention. The position source for ADS-C reports is **GNSS**
- The information is displayed to ATC and can also be used by automated flight tracking and monitoring systems
- Reports from aircraft to ATC via a **VHF or satellite data link (** position, velocity, intent, weather info.)

IATA Position on ADS-C:

Support ADS-C based operation for **oceanic and remote airspace**. ADS-C contracts should be determined with an agreed service in consultation with airspace users, and reporting periods should be limited to what is required to enable the separation minimum being applied, in accordance with ICAO provisions.

Automatic Dependent Surveillance Broadcast OUT (ADS-B OUT)

- ADS-B OUT is a surveillance technology by which an aircraft periodically and automatically broadcasts its state vector (horizontal and vertical position and velocity) and other aircraft data such as identification

IATA Position on ADS-B-OUT:

- Support implementation of ADS-B OUT based on Mode S Extended Squitter (1090ES) data link. ADS-B **should not be implemented as a redundant surveillance** capability.
- Provided there is a positive business case, it should **replace radar**, or be used in **non-radar** airspace to improve ATS surveillance.
- Mandating ADS-B OUT avionics equipage should be considered only for the airspace where ADS-B is planned to eventually be the **only surveillance capability**. Once ADS-B service is operational, ANSPs should, establish a timeline to decommission other surveillance infrastructure.
- Performance requirements for ADS-B OUT should be consistent with its operational use, applicable separation standards as documented in ICAO provisions and guidance.

Traffic Information Service - Broadcast (TIS-B)

- TIS-B enables SSR (Mode S and Mode A/C) or ADS-B surveillance data from multiple link sources to be combined and uplinked to an aircraft equipped with **ADS-B IN**, increasing situational awareness in the cockpit by providing the data to the Cockpit Display of Traffic Information (CDTI).

IATA Position on TIS-B:

Do not support TIS-B as IATA has not yet identified cases for which there exists a positive business case for airlines to use TIS-B.

Precision Approach Radar (PAR)

- PAR allows controllers to monitor the approach path of an aircraft and provide lateral and vertical guidance by issuing instructions to pilots.
- PAR is still used by military organizations, but airline users no longer derive benefit from this technology

IATA Position:

- Do not support PAR for civil aviation. There is no airline requirement for PAR. Any user charges associated with existing PAR installations should be eliminated

THANK YOU