



Surveillance

CUSTOMER PERSPECTIVE

Kieran O'Carroll - IATA Office for the Americas - Miami



IATA Position: Primary Surveillance RADAR (PSR)

Do not support PSR deployment for civil air traffic services, as SSR and ADS-B have vastly superseded this technology and there is currently no operational benefit for PSR surveillance. Therefore, user charges associated with future upgrades or new PSR installations should be removed.



IATA Position: Secondary Surveillance RADAR (SSR)

Support SSR Mode S over SSR Mode A/C where radar must be established or replaced. SSR Mode S improves the quality and integrity of surveillance compared to Mode A/C.



IATA Position: Precision Approach Radar (PAR)

There is no airline requirement for PAR. User charges associated with existing PAR installations should be eliminated.



IATA Position: Automatic Dependent Surveillance Broadcast (ADS-B) OUT

Support implementation of ADS-B OUT based on Mode S Extended Squitter (1090ES) data link to supplement and eventually replace radar, and in non-radar airspace if traffic could benefit from ATC surveillance. Transition timelines need to be determined in consultation with airspace users. Operational and maintenance savings should be passed on to airspace users.



IATA Position: Automatic Dependent Surveillance Broadcast (ADS-B) IN

ADS-B IN is seen as the preferred next generation surveillance technology for air transportation. IATA endorses the concept of ADS-B IN according to ICAO's Global Air Navigation Plan.



IATA Position: Candidate ADS-B Data links

Support Mode S 1090 ES as the single, interoperable data link to support ADS-B for the foreseeable future. Mode S 1090 ES is a technology available and mature today, enabling early application. IATA does not support VDL Mode 4 or UAT for international air traffic services or user charges associated with these technologies.



IATA Position: Automatic Dependent Surveillance Contract (ADS-C)

Support ADS-C based surveillance for oceanic and remote airspace where appropriate. ADS-C contracts should be determined with an agreed service in consultation with airspace users, i.e. a 32 minute periodic contract for a RNP4 approved aircraft for 50NM longitudinal separation or a 14 minute periodic contract for a RNP4 approved aircraft for 30NM longitudinal separation, etc.



IATA Position: Traffic Information Service - Broadcast (TIS-B)

Support a single data link standard based on 1090ES. If a single standard is not implemented, then ADS-B IN systems will require TIS-B functionality to display all aircraft of relevance in any given traffic situation. TIS-B should be considered to increase situational awareness during the transition from radar to a full ADS-B environment.



IATA Position: Multilateration (MLAT)

Support MLAT to meet specific surveillance requirements when supported by clear operational requirements, separation minima, and a Cost-Benefit Analysis (CBA) involving all stakeholders. If MLAT is deployed, it should be configured to facilitate possible integration of ADS-B ground stations in a future surveillance mix.



IATA Position: Satellite Based Augmentation System (SBAS)

Do not support the continued investment, development and implementation of SBAS. No business case involving tangible operational benefits has been demonstrated for airlines in support of SBAS; therefore, this is the only GNSS augmentation system that airlines are not willing to pay for cost recovery.



Global Flight Tracking - Space Based ADS-B

During February 2015 the second ICAO High Level Safety Conference identified satellite based reception of ADS-B as a future technology that could support flight tracking in oceanic and remote airspace and recommended that ICAO encourage States and the ITU to discuss allocation requirements at WRC-15 to provide the necessary frequency spectrum allocations to enable global air traffic services (ATS) surveillance, using this technology.



IATA Position: SPECTRUM REQUIREMENTS FOR INTERNATIONAL CIVIL AVIATION

To work jointly with ICAO to promote a common aviation position at the ITU WRC that aims to preserve and protect aeronautical spectrum for radio communication and radio navigation systems, which are required for current and future safety-of-flight applications.



ATC Charges: How much do IATA members pay?

\$92.3 billion for the use of airport and air navigation infrastructure globally in 2011.

Equivalent to 14.4% of the cost of air transport.



Montego Bay Declaration

Regional Air Transport Conference

Montego Bay, Jamaica, 7 to 9 October 2014

Statement on the development of Air Transport in North America, Central America, the Caribbean and South America

“States should endeavor to provide the necessary infrastructure of airports and air navigation services to meet the needs of traffic growth and the technical requirements of ICAO, and that recovery of the cost in providing these services be based on ICAO’s policies on charges.”



Reality Check 1

Europe :

COMMISSION IMPLEMENTING REGULATION (EU) No 1207/2011, Nov 2011

SPI-IR (Surveillance Performance and Interoperability – Implementation Rule)

Amended by Regulation (EU) No 1028/2014, 26. September 2014

Timeline: 8 Jun 2016 for new aircraft; 7 Jun 2020 for retrofit

Technical requirements:

- Transponder DO-260B
- GPS with SA = ON acceptable
- ADS-B fail indication
- ☒ Small percentage of aircraft compliant
- ☑ Some aircraft compliant today
- ☒ Virtually all aircraft must be modified

No legally binding requirement on Air Navigation Service Providers (ANSP) to use the surveillance data transmitted by aircraft for operational purposes!



Reality Check 2

USA :

Next Generation ATM System (Advisory Circular 20-165A) 1 Jan 2020

Technical requirements:

- | | |
|--|--------------------------------------|
| ○ Transponder DO-260B | ☒ Cost / Benefit? |
| ○ GPS with SA = OFF/Aware is required | ☒ Low aircraft compliance today |
| ○ ADS-B fail indication | ☒ Virtually all a/c must be modified |
| ○ FAA RAIM prediction tool (or equivalent) | ☒ Costly for airlines to implement |
| ○ SBAS recommended | ☒ 2% equipage; huge cost |

The ADS-B Navigation Accuracy Category for Position (NACp) Performance requirements mandated by the FAA diverge significantly from ICAO standards and are not harmonized with Europe.

The accuracy and integrity requirements defined by the FAA for ADS-B implementation are, in some areas, 100 times more stringent than those proposed by EASA in Europe.



Reality Check 3

Worldwide ADS-B OUT regulations are not harmonized

CANADA USA EUROPE
SINGAPORE
AUSTRALIA HONG KONG



Reality Check 4

Required Aircraft Modifications

For example, to comply with EC 1207/2011

- Upgrade both ATC transponders (replacement where required)
- Upgrade GPS position source(s) (replacement for a/c without MMR)
- Upgrade Flight Deck Control and Indication Capability
 - (to implement ADS-B fail functionality)
 - requires upgrade of the ATC/TCAS control panel, wiring modifications and/or upgrade of the Electronic Indication System EIS, and other t.b.d. systems
- Additional aircraft wiring
- Flight Management Computer upgrade where flight ID change during flight is not available



Reality Check 5

Cost Assessment to comply with EU regulation

Legacy Aircraft

In excess of \$500,000 per airframe

Later Generation Aircraft

In excess of \$100,000

Source: IATA/AEA JURG Airlines



Conclusion

- Airspace users carry a very high financial burden to equip airframes for compliance with mandates which in some cases offer no perceivable benefit.
- Civil aircraft surveillance implementations must be coordinated between airspace users and service providers and supported by a positive business and/or operational case.
- Requirements for airborne equipage must be harmonized and synchronized (Standards and Timelines) and based on pragmatic needs to deliver viable benefits to airspace user **customers**.
- ANSPs share the responsibility for timely delivery of surveillance **benefits**.



תודה
Dankie Gracias
Спасибо شكراً
Merci Takk
Köszönjük Terima kasih
Grazie Dziękujemy Děkojame
Ďakujeme Vielen Dank Paldies
Kiitos Täname teid 谢谢
Thank You Tak
感謝您 Obrigado Teşekkür Ederiz
Σας Ευχαριστούμ 감사합니다
ขอบคุณ
Bedankt Děkujeme vám
ありがとうございます
Tack



70 YEARS
1945—2015
Flying better. Together.