



Future of Surveillance

Surveillance/MICA Workshop

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26-28 February 2019

ADS-B in EU

- Hybrid Surveillance: Active and Passive Surveillance using ADS-B data in Europe (EU)
- Supported by EU regulation SPI-IR ((EU) 1207/2011 amended by (EU) 2017/386) → under review
 - Mandate ADS-B v2 for IFR >5700kg
 - Smooth retrofitting of the existing fleet
 - ADS-B ground receiver as surveillance layer
 - In addition - Spectrum protection requirement
 - Member States shall ensure that a secondary surveillance radar transponder on board any aircraft flying over a Member State is not subject to excessive interrogations
- Remove Mode AC radar

ADS-B Benefits

- ADS-B data can be used by Mode S radars to reduce the number of aircraft replies:
 - Aircraft acquisition using ADS-B messages (short range radar)
 - Required number of All-Call interrogations can be reduced
 - Some aircraft parameter can be retrieved directly from ADS-B messages
 - Selective interrogations to request BDS extraction can be reduced

- TCAS Extended Hybrid Surveillance
 - ACAS X
 - MOPS (Minimum Operational Performance Standard) OK
 - TSO OK → New TCAS systems must be ACAS X

- Rationalise the ground infrastructure to reduce 1030/1090MHz band occupancy

Permanent 1030/1090MHz Monitoring

- Permanent monitoring in NM IR (EU)2019/123
 - To avoid disruption of network
- IC allocation also in NM IR (EU)2019/123
- Should be done by EUROCONTROL

ADS-B in other regions

- US Mandate requiring ADS-B Out where a transponder is currently required for January 2020
- ADS-B also used in Australia, Canada, Portugal, Iceland...

One step further

- ADS-B In
 - For Air-Air communication
 - E.g. interval management, separation

Future Standards

- RTCA/EUROCAE group meeting (EUR+US)
 - Transponder MOPS
 - ADS-B

- Change Mode S transponder replies limit
 - To prevent a transponder to warm-up and stop responding
 - Cannot stop emitting during more than 100ms

- ADS-B v2 → ADS-B v3
 - New squitters for meteo data

- Phase modulation at the level of transponder
 - 4 times more information in messages
 - E.g. on long Mode S replies (EHS) could contain BDS 40, BDS 50 and BDS 60, Mode S address and ADS-B position
 - Could be used by ADS-B ground receiver