

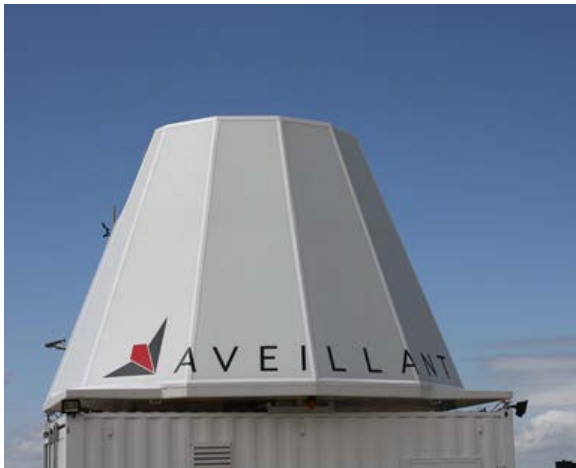
EUROCAE WG-103

Independent Non-Cooperative Surveillance



Tim Quilter
Chairman

- ▶ Holographic Radar - fully digital staring radar
- ▶ Theia 16 – first of type wind farm infill radar
- ▶ Gamekeeper – drone detection
- ▶ Theia - long range development

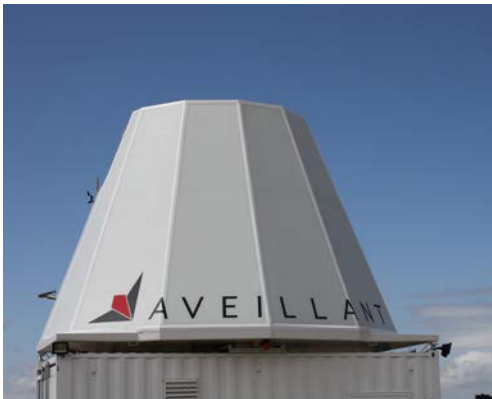




Why is a new standard needed?

New and emerging technologies

- New technologies such as Holographic Radar
- X-band rotating radars
- Experimental Multi-static Primary Surveillance Radar (MSPSR)
- Backward compatible with Primary Surveillance Radars (PSR)





Why is a new standard needed?

Changing environment

- Increased security needs
- Global tension
- Drones
- More complex radar clutter





What's wrong with the old standards?

- 1997 - EUROCONTROL Standard for Radar Surveillance in En-route airspace and major terminal areas (Blue Book)
 - Assumes classic rotating radar, not applicable for new technologies
- 2015 - EUROCONTROL Specification for ATM Surveillance System Performance (ESASSP)
 - Requirements on the end to end surveillance chain not the sensor
 - Poor coverage of non-cooperative requirements
- Generic Surveillance Safety Performance Requirement (GEN SUR SPR)
 - Current draft focusses on cooperative surveillance
 - Work being expanded in EUROCAE WG-102
 - New ESASSP document planned based on this





WG-103 Independent Non-Cooperative Surveillance (INCS)





The EUROCAE process

- Founded in 1963 in Lucerne by ECAC
- 230+ Member organisations
- 38 active working groups
- 2000+ experts
- Transparent and open process
- Consensus driven development
- Worldwide recognition
- Best industry practice
- Soft law





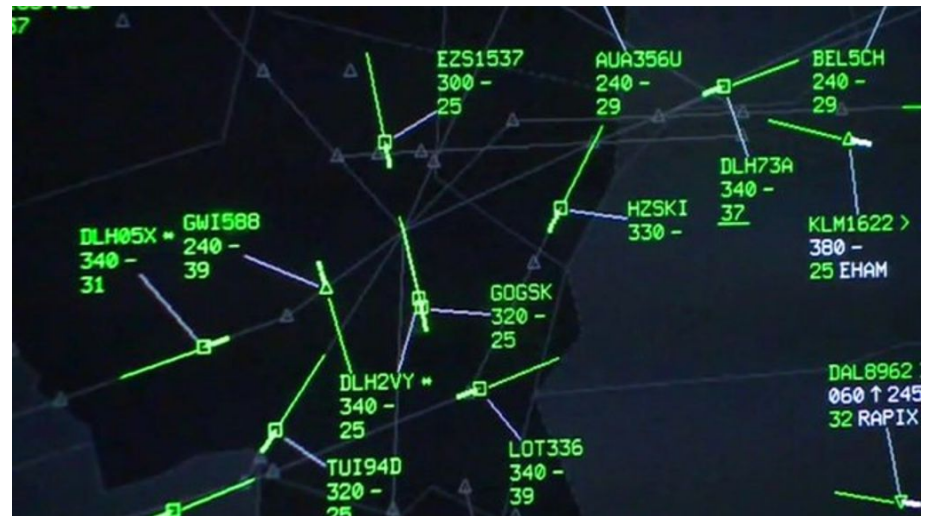
INCS operational scenarios

Main use cases

- ➔ Non-cooperative infringement
- ➔ Cooperative link failure (single aircraft)
- ➔ Cooperative link failure (multiple aircraft)

Secondary use cases

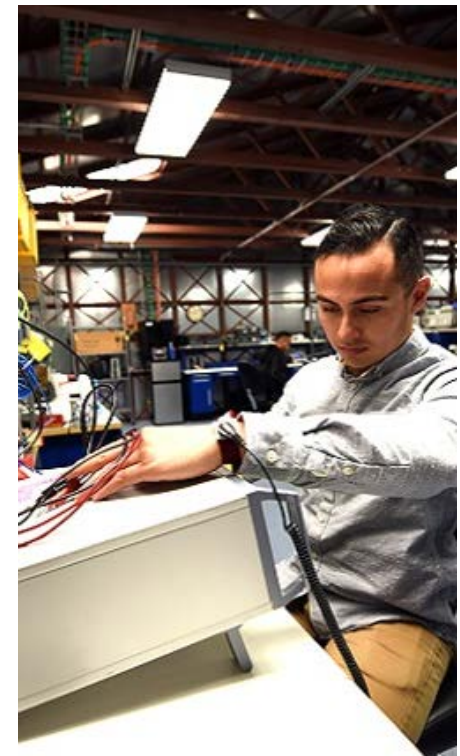
- ➔ Infringement by small UAS
- ➔ Non-cooperative separation





New approaches

- ➔ Operationally driven requirements
 - ➔ Coverage area operationally defined
 - ➔ Area based performance requirements
- ➔ Technology independent
 - ➔ Doesn't assume 360 degree rotating sensor
 - ➔ Doesn't assume a particular frequency of operation
 - ➔ Typical aircraft not Radar Cross Section
 - ➔ Required to operate in normal environment
- ➔ Testing cost minimised
 - ➔ Factory type tests
 - ➔ Targets of opportunity (flight checks minimised)
 - ➔ Performance "at any point" assessed on grid basis





The rising tide floats all boats