AeroMACS

The new-generation airport datalink for airlines, airport authorities and air navigation service providers to stay connected at airports

AeroMACS, the Aeronautical Mobile Airport Communication System, is:

- an internationally standardised and globally harmonised broadband IP datalink for safety and regularity of flight communication exchanges at the airport surface
- based on commercial 4G technology (IEEE 802.16 standard)
- a mature and validated solution to support mobile as well as fixed users
- offering worldwide interoperability and integration of critical communications for ATS, AOC and airport authority communications
- a component of the wider future aviation communication infrastructure (FCI), supporting the FCI multi-link concept
- included in the Communication Roadmap of the ICAO Global Air Navigation Plan (GANP)
Key benefits

- Provides high throughput for airport surface communications
- Provides relief to the congested VHF spectrum at airports
- Supports worldwide interoperability
- Reduces overall costs (via synergies of sharing infrastructure)
- Offers increased security capabilities
- Can help to reduce airport congestion and delays
- Enhances situational awareness at the airport surface
- Operates in ITU regulated spectrum, offering protection from interference caused by unauthorised transmissions
- Maintains aeronautical usage for 5 GHz band in ITU
- Prepares for the integration of future FCI components with which it will share infrastructure (network, security, etc.)

Key technical features

- Modern 4G cellular technology, based on commercially used standards (802.16, WiMAX)
- Operation in globally allocated and protected spectrum - C-Band (5091-5150MHz), AM(R)S allocation, Channel bandwidth: 5MHz
- High data throughput (up to 10 MBps)
- Mobility (up to 50 knots) and extended coverage (up to 3 km per cell)
- Different priority levels and security capabilities
- Support to a wide range of ATC, AOC and airport applications (data, voice, video and various classes of service quality: from real time to best effort) for mobile and fixed users
- Internationally standardised air interface (ICAO, EUROCAE/RTCA and AEEC)

Users

AeroMACS can support services requiring high performance, stringent quality-of-service, security, broadcast, multicast and mobility capabilities.

It can support mobile services as well as fixed services:

**Mobile services** (airport service vehicles, hand-held devices and aircraft)
- ATS/AOC services
- Service vehicles and aircraft
- Potential use for future mobile SWIM applications

**Fixed services** (sensors, etc.)
- Video surveillance
- Data collection and sharing
- Wireless backhaul
SESAR1 AeroMACS Projects

**P15.02.07:** Airport Surface Datalink (overall system aspects and the ground component)

**P09.16:** New Communication Technology at Airport (airborne component)

### Achievements

- Development of two independent AeroMACS prototype equipment (including multiple Mobile Stations) and Base Stations
- Testing and integration of prototypes in lab, real airport environment (on cars and aircraft) and onboard an aircraft
- Demonstration of the AeroMACS technical profile and architecture
- Global harmonisation especially with the US and Japan
- International standardisation and technical validation of standards
- Establishment of AeroMACS as a SESAR technical solution (#102)

### Key deliverables

**P15.02.07 deliverables:**
- D04: Deployment and Integration Analysis
- D05: Prototype Description and Verification Strategy
- D08: Safety and Security Analysis
- D06 and D10: Verification Plan and Report Phase 1 and Phase 2
- D07: Standardisation and Global Interoperability
- D09: Final Project Report

**P09.16 deliverables:**
- D11: Final Validation Report
- D00: Final Project Report

### Partners:

![Partners Logos]
AeroMACS aviation standards

- AeroMACS SARPs (ICAO Annex 10, Vol III, Ch7)
- AeroMACS Manual (ICAO Doc10044, expected to be finalised in 2016 Q3)
- AeroMACS Profile (EUROCAE ED222 and RTCA Do345)
- AeroMACS MOPS (EUROCAE ED223 and RTCA Do346)
- AeroMACS MASPS (EUROCAE EDxxx, publication expected in 2016 Q3)
- AeroMACS Avionics Standard (AEEC/ARINC 7xx, expected to be finalised in 2017 Q2)

Extensive testing in Europe, US and Asia

- **Europe:**
  - SESAR1 projects with two independent prototype developments (LEONARDO and Thales) supporting testing and validation evaluation in labs, aircraft and at the Toulouse Airport
  - SANDRA EU project: testing and validation at Oberpfaffenhofen airport
  - SESAR2020: additional testing, trials and/or demos are expected

- **US:** FAA/NASA AeroMACS Testbed at Cleveland Hopkins Airport

- **Japan:** JCAB/ENRI AeroMACS Testbed at Sendai Airport

- **China:** trials in Chengdu International Airport