

AeroMACS

Why it is important for aviation

AeroMACS Open Day

Firenze, 06/07/2018

Nikos Fistas and Víctor Flores

EUROCONTROL

Introduction

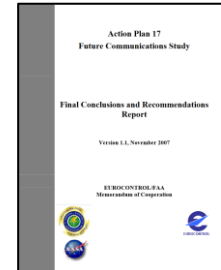
- Context
- Standards
- Current Developments
- Benefits

Aeronautical Mobile Airport Communication System (AeroMACS) in one slide

- an **internationally standardised** and **globally harmonised** broadband IP datalink for **safety and regularity of flight** communication exchanges at the **airport surface for Airports, Airlines and ANSPs**
- based on commercial 4G technology (IEEE 802.16 standard)
- a **mature** and **validated solution** to support **mobile & 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**) and the **European ATM MasterPlan**

Origins and International Coordination

- EUROCONTROL/FAA Memorandum of Cooperation:
 - ✓ Action Plan 17 - Future Communications Study
 - ✓ Recommendation in 2007 of an IEEE 802.16e-based system as the solution for the provision of dedicated aeronautical communication services on the airport surface utilizing proposed aeronautical C-band allocations.
- ICAO COM Panel endorsed in 2008 of AP17 Study recommendations (leading to inclusion in the ICAO GANP)
- Europe / US coordination on AeroMACS continued under SJU/FAA Coordination Plan 4.4 and EUROCONTROL/FAA Action Plan 30



Activities in Europe

■ SESAR1 (2008-2016)

- P15.02.07 - Airport Surface Datalink



- P9.16 - New Communication Technology at Airport



■ SESAR2020 – Wave 1 (2017-2019)

- PJ14-02-06 – Completion of AeroMACS development



■ SESAR 2020 – Wave 2 (2019-2021)

- Under consideration

AeroMACS Standards

- **Profile** (EUROCAE / RTCA / WiMAX Forum)

- ✓ ED-222 / DO-345



- **MOPS** (EUROCAE / RTCA) and **MASPS** (EUROCAE)

- ✓ ED-223 / DO-346
- ✓ ED-227



- **SARPS** and **Technical Manual** (ICAO)

- ✓ Annex 10 Vol III, Chapter 7.
- ✓ DOC10044



- **Avionics/ARINC Specification** (AEEC)

- ✓ ARINC 766



- **(European) Harmonised Standards** (ETSI)

EN xxxx – Under development



AeroMACS Key Technical Features

- Modern 4G technology
- Based on 802.16 (WiMAX) standards
- Frequency band: C-Band (5091-5150MHz), AM(R)S allocation, Channel bandwidth: 5MHz
- High data rate (1,8 MBps to 9,2 MBps)
- Different **priority levels** and **security capabilities**
- Support for **wide range of applications** (data, voice, video and various classes: **real time to best effort**)

AeroMACS Users & Services

Mobile services

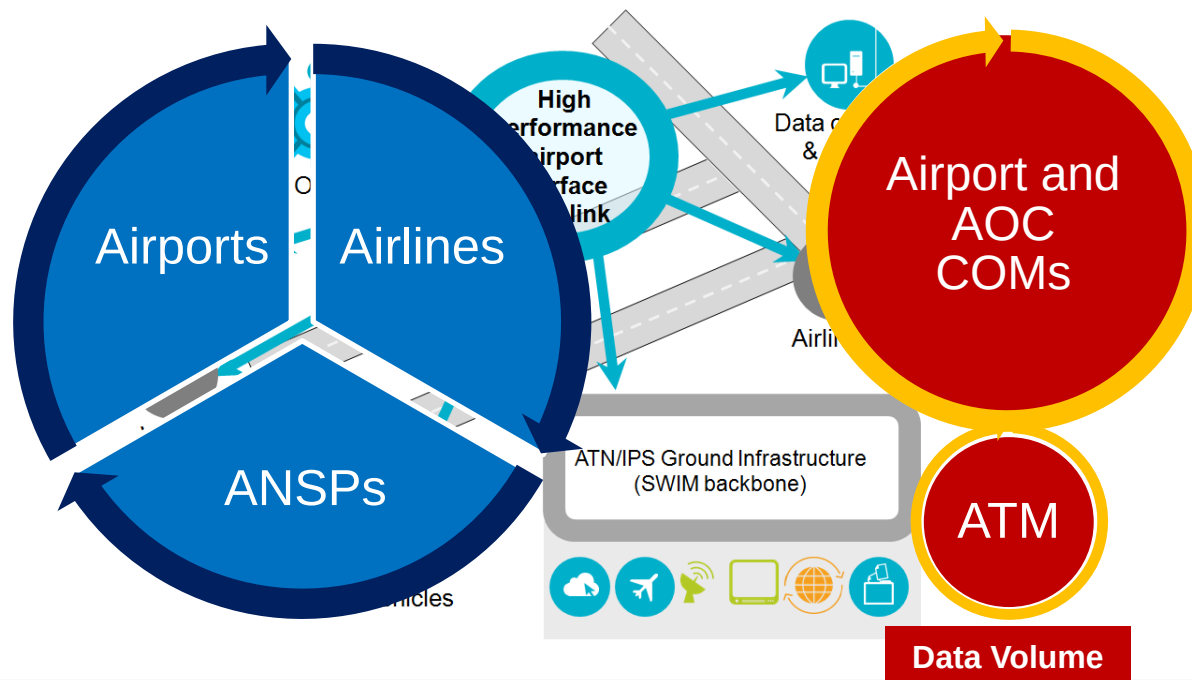
(airport service vehicles, hand-held devices and aircraft)

- ATS/AOC services
- Service vehicles and aircraft
- Mobile SWIM applications

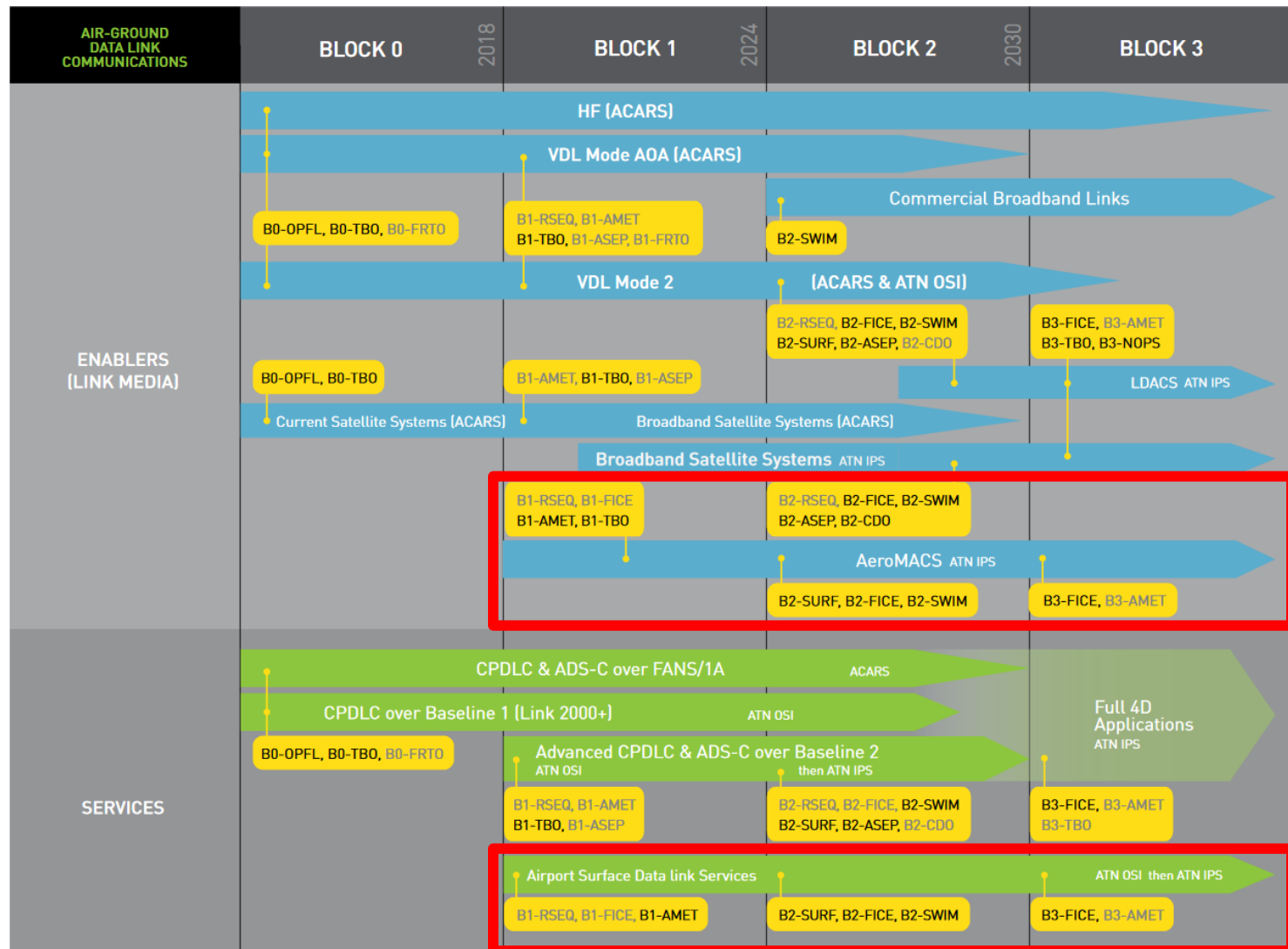
Fixed services

(sensors, etc.)

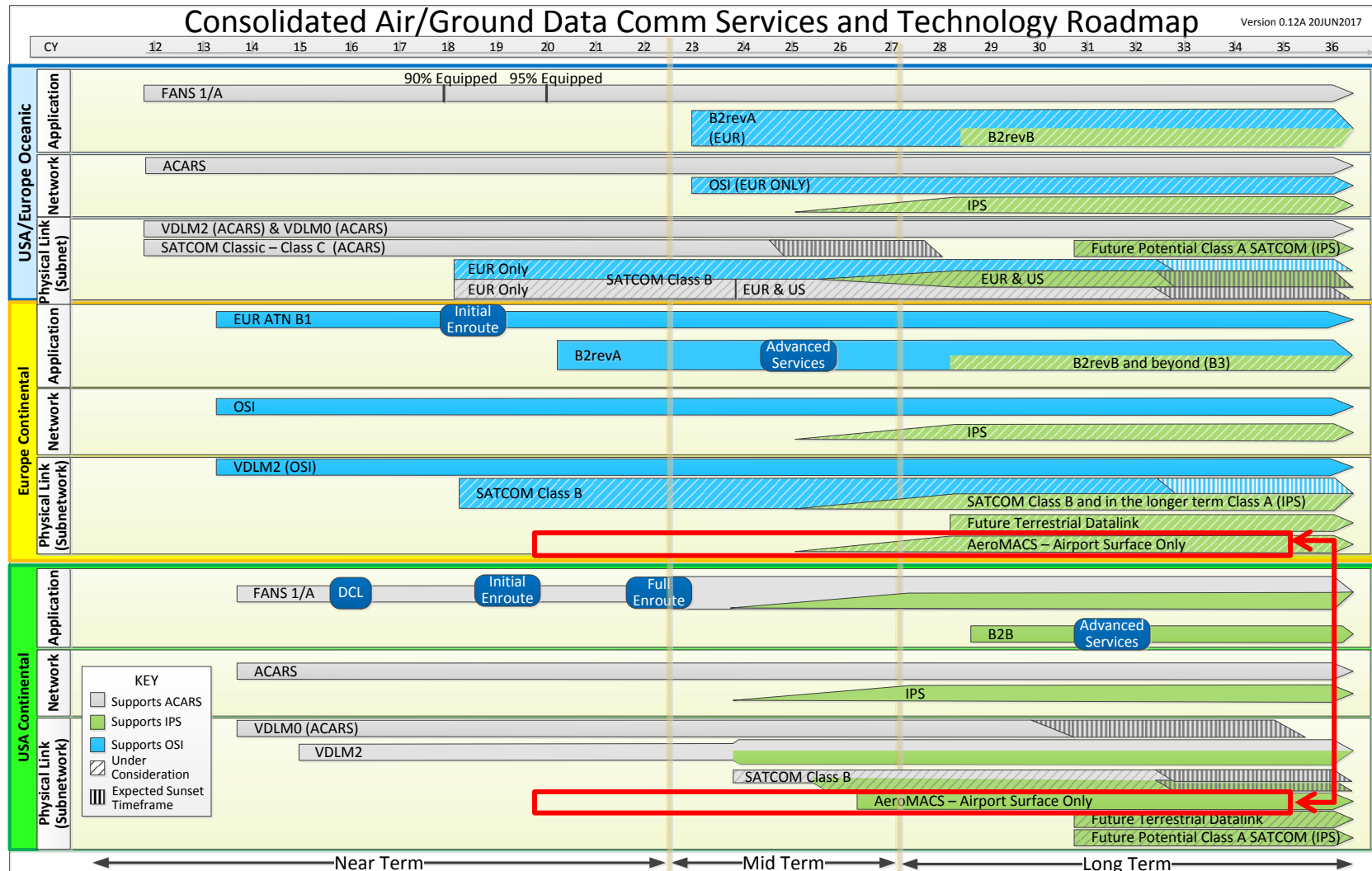
- Video surveillance
- Data collection and sharing
- Wireless backhaul



ICAO GANP: COM Roadmap



U.S/Europe Air/Ground Data Communications Roadmap



Current Deployments

■ Europe

- Lisbon Airport
 - Operational Network supporting ground vehicles and fixed stations
 - Update ongoing of existing network to a fully AeroMACS compliant network

■ US

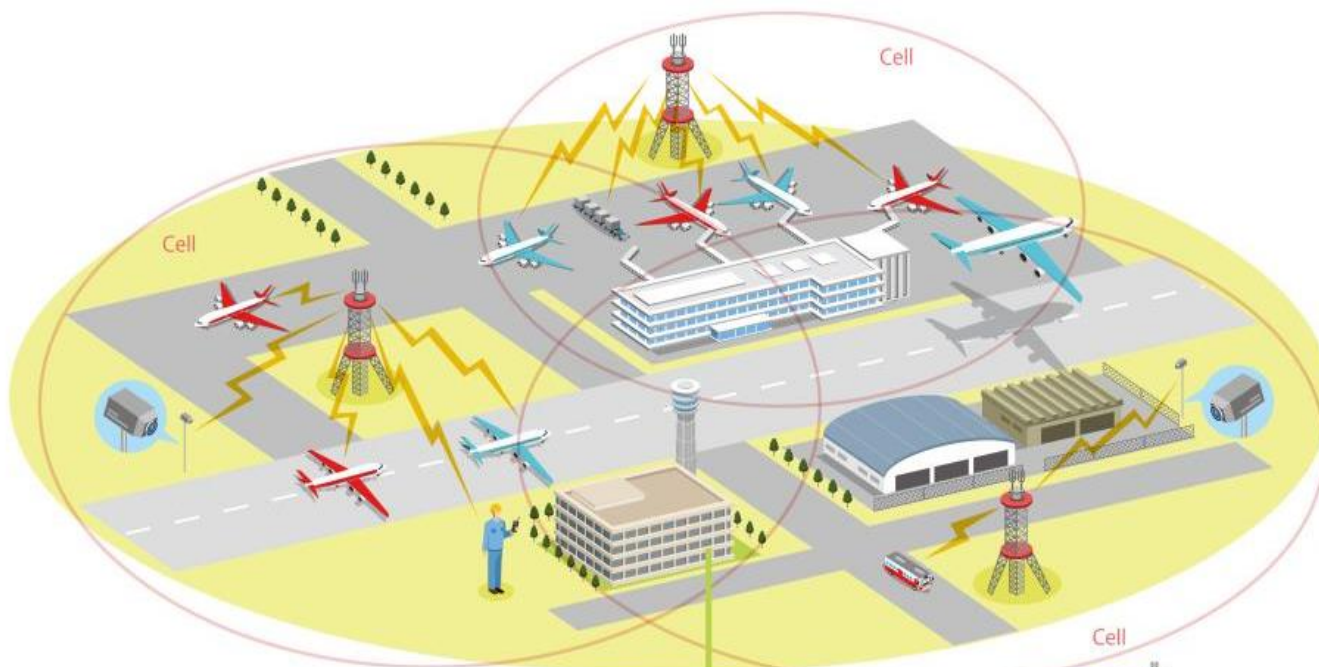
■ ...

■ China

■ ...

AeroMACS - 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 (protects) 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.)



Questions?