



# Surface Air-Ground Datalink Communications System (AeroMACS)

Melbourne, FL

March 10-11, 2015

# Aeronautical Mobile Airport Communications System



- Aeronautical Mobile Airport Communications System (AeroMACS) is a WiMAX based technology (IEEE 802.16) supporting airport broadband communications
- Operation in 5091-5150 MHz (extended MLS band) protected spectrum
- 5 MHz channel BW - 11 adjacent channels
- In band Interference considerations: Globalstar (uplink), telemetry AMT (reverse link only)
- Intended for use on airport surface (not on Runways) with aircraft speeds  $\leq 50$  knots
- Supporting both ATC and AOC applications

# ICAO WG-S Status



- WG-S is an International Civil Aviation Organization (ICAO) sponsored initiative to develop standards for the Aeronautical Mobile Airport Communications System (AeroMACS)
- WG-S Objectives
  - Develop of the System and Recommended Practices (SARPs) standard
  - Develop a Technical Manual (TM) for the AeroMACS system
  - Coordinate with other committees as necessary

# ICAO WG-S Status



- WG-S held its sixth meeting on November 13-14, 2014 in Sendai, Japan
- Work accomplished included:
  - Reviewed the status of relevant work programs
  - Detailed review of the AeroMACS SARPS validation reports
  - Reviewed the performance of the ENRI AeroMACS prototype
  - Reviewed the AeroMACS draft SARPS

# ICAO WG-S Status



- AeroMACS Technical Manual
  - The draft AeroMACS manual was reviewed at WG-S/6 meeting
  - The WG-S members were asked to review the latest draft and complete open actions items prior to the next WG-S meeting
  - Completion date is scheduled for the end of 2015
- AeroMACS SARPS
  - The AeroMACS SARPS was approved by the Communication Panel meeting held December 1-5, 2014 in Montreal, Canada
- Future Work
  - WG-S held a teleconference on January 29, 2015 to review work associated with the Technical Manual
  - Next meeting of WG-S is scheduled for March 17-19, 2015 in Montreal, Canada

# AEEC AeroMACS Phase 1 Status and Progress



## SAI Subcommittee leading AeroMACS architecture effort

Selex ES has proposed six possible architectures for airborne radios, antennas, gateways, routers, etc.

1. **Architecture 1A:** AeroMACS provides AOC services in AIS domain.
  2. **Architecture 1B:** AeroMACS provides ATS services in AC domain.
  3. **Architecture 2A:** AeroMACS provides ATS services in AC domain using one router and dual-stack protocol, ACARS and ATN.
  4. **Architecture 2B:** Architecture 2A plus direct connection to open router in AIS domain.
  5. **Architecture 3A:** AeroMACS in AC domain using ATN/ISP router (new equipment).
  6. **Architecture 3B:** Architecture 3A plus direct connection to open IP router in AIS domain.
- Discussed by SAI Subcommittee: Seattle, Brussels, Coral Gables, etc.
- Phase 2 (Radio, Antenna, Installation, etc.) will rely on solid Phase 1 recommendations

# Discussion Points - Airlines



- **Operational:** Must support safety and regularity of flight
- **Institutional:** Who will offer AeroMACS data comm services?
- **Reliability:** 99.999%, prioritization, availability
- **Security:** Authorized users, encryption, resiliency
- **Architecture:** Proven, standards-based, scalable, COTS
- **Installation:** Initial, upgrades, technology advancement
- **Funding:** Capital installation costs, Operational costs
- **Benefit:** Making the business case to equip
- **Schedule:** When to invest?

# Discussion Points – SAI SC



## SAI Topics – February 4-6 – Coral Gables, Florida

- AeroMACS Systems Architecture
- AeroMACS Network Reference Model
- AeroMACS Business Case Development
- FCC Policy Petition for AOC Status
- Model of Ground Business Entities
- AeroMACS Avionics Equipment Definition
- Preparation of the ARINC Standard
  - Honeywell offer to prepare strawman AeroMACS radio standard
  - Selex ES offer to prepare same
  - Great opportunity for collaboration

## Next SAI – June 23-25 – Lufthansa, Frankfurt



# EUROCAE WG-82



- EUROCAE WG-82 is continuing with the development of:
  - A system Minimum Aviation System Performance Standard (MASPS)
  - Ground equipment MOPS



- Questions?