Standards In Support of CNS/ATM

Presented to

2009 ICNS Conference

Session C1—Standards for CNS/ATM

May 13, 2009

Performance Standards:
Essential to Implementing Operational Capabilities Enabled by CNS/ATM

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Topics

- RTCA Overview
- RTCA Standards Update
- Operational Capabilities, the Aircraft, and Standards

RTCA Overview

RTCA, Inc.

- Organization Membership-Based Not-For-Profit Corporation
- Serves as the Collective Voice of the Aviation Community
- Utilized by the Federal Aviation Administration (FAA) as a Federal Advisory Committee

RTCA Mission

- Enhancing the state of air transportation by forging community-wide *consensus* recommendations to government
- Two Categories of Recommendations
  - Policy and Investment Recommendations to facilitate *Implementation*
  - Minimum Aviation System Performance Standards (MASPS) and Minimum Operational Performance Standards (MOPS) & Guidance Documents
    - Basis for Certification: GNSS, ADS-B, Data Comm…
- Aviation Community Relationships
  - International: ICAO, Government, Industry
  - Domestic U.S.: FAA, Airlines, General Aviation, DoD, Suppliers, Labor, Academics

RTCA Membership

- RTCA Finished 2008 With Record 415 Members and Associates
  - Private Sector Members 246
  - U.S. Government Members 8
  - International Associates 144
  - Academic Associates 17
- Membership Growing
  - Participation in RTCA activities provides insight into future operational requirements
  - Offers opportunity to help shape aviation system
  - Provides unlimited access to RTCA document library

Aviation Community Participation

October 2007 to September 2008

- 23 Committees
- 166 Plenary Meetings
- 1100 Individual Volunteers
- 365 Distinct Companies
- 6500 Total Days of Voluntary Participation

RTCA

RTCA Mechanisms

- Policy and Investment Recommendations:
  Air Traffic Management Advisory Committee (ATMAC)
  - Utilized as Federal Advisory Committees
  - Open to public
  - ATMAC Assigns Specific Tasks to Select Work Groups
- Aviation Performance Standards and Guidance:
  Special Committees (SCs)
  - Established by Program Management Committee (PMC)
  - Utilized as Federal Advisory Committees
  - Open to public
  - SCs Establish Open Work Groups as Needed
- Tough Implementation-related Issues:
  Task Forces
  - Participation Open
  - Short duration
  - Clear deliverables

RTCA Aviation Recognition

- Collier Award
  - 2007: ADS-B Team
  - 1948: “For a guide plan for development of a system of air navigation and traffic control…”
- ICAO 50th Anniversary Medal

RTCA Standards Update

Standards for CNS/ATM

Advancing the State of Air Transportation

- Expedite operational capabilities
- Ensure safety
- Ensure global harmonization/interoperability
- Enhance economics of aviation
  - Reduce government regulator costs
  - Reduce supplier costs
  - Reduce purchaser costs
  - Reduce implementation time lines
  - Expand size of marketplace for products

Current RTCA Special Committees

Communications	Navigation	Surveillance and TCAS	Cross-Cutting, and Other
SC-222	SC-220	SC-218	SC-221
SC-214	SC-219	SC-186	SC-216
SC-206 WG-71	SC-217 WG-44	SC-147	SC-211
	SC-213		SC-205 WG-71
	SC-159		SC-135
SC-203			

Current RTCA Special Committees

Communications	Navigation	Surveillance & TCAS	Cross-Cutting, and Other
Inmarsat AMS(R)S	Automatic Flight Guidance and Control	Future ADS-B/TCAS Relationships	Aircraft Secondary Barriers
Standards for Air Traffic Data Communications	Attitude and Heading Reference Systems	Automatic Dependent Surveillance - Broadcast	Aeronautical Systems Security
Aeronautical Information Services Data Link	Terrain and Airport Databases	Traffic Alert & Collision Avoidance System	Rechargeable Battery Systems
	Enhanced Flight Vision & Synthetic Vision Systems		Software Considerations
	Global Positioning System		Environmental Test
Unmanned Aircraft Systems			

Communications SCs

Committee	Brief Overview
Aeronautical Information Services (AIS) Data Link	Define requirements for worldwide Flight Information Services (FIS) and Aeronautical Information Services (AIS) functions
NextGen Air Traffic Data Communication Services	Develop standards for ATS safety, performance and interoperability requirements supported by data communications
Inmarsat AMS(R)S	Facilitate evaluation and approval of Iridium Satellite services for safety critical communications and harmonize RTCA Documents with the revised ICAO Documents

Navigation SCs

Committee	Brief Overview
Automatic Flight Guidance and Control Systems	Develop MOPS and installation guidance for AFG&CS
Attitude and Heading Reference System	Develop MOPS for Solid-State Strap-Down Attitude and Heading Reference Systems
Terrain and Airport Databases	Update the industry requirements and assist in specifying information used in Airport Moving Map (AMM) and other systems.
Enhanced Flight Vision Systems/Synthetic Vision Systems,	Develop MASPS-level guidance for SVS, EFVS and combined architectures
Global Positioning System (GPS)	Develop minimum standards for FAA approval of equipment using GPS as a primary means of civil aircraft navigation.

Surveillance and TCAS SCs

Committee	Brief Overview
Automatic Dependent Surveillance – Broadcast	Develop operational requirements and minimum performance standards for ADS-B; consider both airborne and ground user needs for this capability.
Traffic Alert & Collision Avoidance System (TCAS)	Develop and maintaining MOPS for TCAS
Future ADS-B / TCAS Relationships	Develop an in-depth report - Assessment, Operational Concept, and Recommendations on the Future Relationship Between ADS-B and TCAS.

Cross-Cutting & Other SCs —1

Committee	Brief Overview
Aeronautical Systems Security	Develop recommendations and guidance material for safe, secure and efficient operations of highly integrated electronic systems and network technologies used on-board aircraft,
Nickel-Cadmium, Lead Acid and Rechargeable Lithium Batteries	Revise MOPS for Nickel-Cadmium and Lead Acid Batteries and develop MOPS for Rechargeable Lithium Batteries.
Software Considerations	Develop updates to three documents that provide the foundation for the development and validation of safety-critical software.

Cross-Cutting & Other SCs — 2

Committee	Brief Overview
Unmanned Aircraft Systems (UAS)	Develop standards, certification criteria, and procedures for UAS sense and avoid systems and protocols to be used for the certification of command, control and communication systems for UAS
Aircraft Secondary Barriers	Develop MOPS containing design characteristics, minimum performance criteria, and installation and certification guidance for Aircraft Secondary Barriers.
Environmental Testing	Update the Environmental Conditions and Test Procedures for Airborne Equipment—the international de facto standard for environmental testing of commercial avionics

Operational Capabilities, Role of the Aircraft, and Performance Standards

Performance Standards and Implementing Operational Capabilities

- Operational Capabilities Should be Performance-Based (e.g. RVSM, RNAV/RNP, OPD)
- Performance Standards are Critical Element in Developing and Certifying the Equipment Needed to Implement an Operational Capability
- Conformance to Standards Assures That Aircraft are "Trustworthy" Partners in the Aviation System
- Trustworthy Aircraft, based on Standards, Are the Key to the Aviation "Solution" and NOT a Problem to be "Controlled"

Thank You!

Any Questions?

www.rtca.org

Ray Glennon

RTCA, Inc.

rglennon@rtca.org