

AEEC • AMC • FSEMC

Aviation Industry Activities Organized by ARINC

Together “*We Set the Standard.*”

ARINC
DEDICATION BEYOND EXPECTATION

Presented to ICNS

May 13, 2009

By Mike Rockwell



ARINC Overview

- ▶ ARINC is a global player in communications, systems engineering and international standards development
- ▶ Airline founded 1929
- ▶ Over 3000 employees in over 50 offices
- ▶ Airlines and other organizations benefit from industry activities that are organized by ARINC



ARINC Industry Activities

- ▶ Airlines, Airframe Manufacturers, Avionic Suppliers, and other stakeholders fund industry activities
 - Independent of other ARINC businesses
- ▶ Goals of Industry Activities:
 - Serve the needs of airline participants and their suppliers
 - Develop standards that enable aircraft systems to interoperate with ground systems
 - Promote fair competition among avionics suppliers
 - Improve avionics reliability through market competition
 - Enable new aircraft and avionics system designs concurrently
 - Economical air transportation that is both safe and efficient
- ▶ ARINC provides leadership in industry

Airlines Electronic Engineering Committee (AEEC)



- ▶ International standards for avionics used on over 10,000 aircraft worldwide
- ▶ Standards developed with broad participation of 5000 people representing over 200 companies
- ▶ ARINC Standards:
 - Characteristics
 - Specifications
 - Reports

AEEC Executive Committee Membership

Airbus

Air France

All Nippon Airways

American Airlines

ATA

Austrian

Boeing

British Airways

Continental Airlines

Delta Air Lines

Federal Express

Finnair

IATA

KLM Royal Dutch Airlines

Lufthansa German Airlines

National Business Aviation Assn.

Northwest Airlines

Southwest Airlines

TAP Air Portugal

United Airlines

United Parcel Service

US Airways

United States Air Force

AEEC Process

- ▶ AEEC Executive Committee sets the program and schedule for developing new standards (e.g., A350 or B-787 equipment drivers)
- ▶ New standards are developed by industry partners working in Subcommittees and Working Groups
- ▶ AEEC Executive Committee “adopts” new standards and supplements to existing standards
- ▶ AEEC General Session / Avionics Maintenance Conf
 - March 30 – April 2, 2009 – Minneapolis, Minnesota
 - ▶ 685 people attend annual conference
 - March 29 – April 1, 2010 – Phoenix, Arizona
- ▶ ARINC standards used on over 10,000 aircraft worldwide

ARINC Standards are used for New Aircraft and Retrofit on Existing Aircraft

CNS	<ul style="list-style-type: none"> ▶ FMS (702A) ▶ VHF (750) ▶ GPS (743, 743A, 743B) 	<ul style="list-style-type: none"> ▶ Nav data base (424) ▶ Transponder (718A) ▶ TCAS / Traffic computer (735A/B)
Data Link	<ul style="list-style-type: none"> ▶ Satcom (741 / 761 / 781) ▶ HFDL (753, 635) ▶ AOC messages (633) 	<ul style="list-style-type: none"> ▶ ACARS (618, 619, 620, 724B) ▶ MCDU (739) ▶ Printer (744)
System Architecture and Interfaces (SAI)	<ul style="list-style-type: none"> ▶ ILS/MMR (710/755) ▶ IMA/APEX (653) ▶ Cockpit Display (661) 	<ul style="list-style-type: none"> ▶ FDR/CVR (747, 757, 777) ▶ TAWS (762) ▶ EFB Interface (828)
Cabin & Galley Systems	<ul style="list-style-type: none"> ▶ 3GCN (808) ▶ Galley Inserts (812 ,813, 814) ▶ Network Server (821) 	<ul style="list-style-type: none"> ▶ Seat integration (628 P2, P5) ▶ File Server (763) ▶ Cabin Telephone (746)
Networks & Security	<ul style="list-style-type: none"> ▶ Ethernet (664) ▶ Security (811) ▶ Gatelink (822) 	<ul style="list-style-type: none"> ▶ Data Link Security (823) ▶ Cabin/seat networks (628) ▶ Avionics buses (429, 629)
Product Support	<ul style="list-style-type: none"> ▶ Data Loading (615 / 615A) ▶ No Fault Found (640) ▶ Electronic Distribution (666) 	<ul style="list-style-type: none"> ▶ Field Loadable Software (667) ▶ Lead-Free Soldering (669) ▶ ATE (608A)

Benefits of AEEC Standards

- ▶ Airlines working together
 - To achieve their goal in avionics engineering and maintenance
- ▶ Standards provide starting point for avionics development
 - Allows airframe manufacturers to pre-wire aircraft
- ▶ Basis for competition among suppliers in the market
 - Reduces long-term avionics maintenance costs
- ▶ Economic advantages continue after purchase
 - Commonality yields familiar test and repair methods
- ▶ AEEC saves industry: \$Millions year over year

Value Created by AMC



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Aviation Industry Activities

- ▶ AMC - AEEC Collocated Meeting
Minneapolis, MN, Mar 29 - Apr 2, 2009
 - 685 people attended
 - 45 airlines attended
 - 184 other organizations attended
 - From 28 countries
- ▶ Promotes Reliability and Reduced Operating Costs in Avionics by Improving Maintenance Through Cooperation
- ▶ Numerous Service Bulletins Issued in Response to AMC Questions
- ▶ Sponsors Standards Activities for Specific Issues
 - Electronic Distribution of Software
 - Field Loadable Software
 - RFID

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Value Created by FSEMC



AEEC•AMC•FSEMC
Aviation Industry Activities

- ▶ FSEMC Meeting Cairo, Egypt, October 5-8, 2009
 - 15 Years of Success That Has Made the FSEMC a Premier Annual Event in Simulation
- ▶ Provides Cost-Effective Solutions to Simulator Operational and Maintenance Problems
- ▶ Numerous Service Bulletins Issued in Response to FSEMC Questions
- ▶ Creates Simulation Standards That Increase Simulator Readiness and Reduce Operational Costs
 - SimSoft
 - Visual Data Base

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AEEC / AMC / FSEMC — Create Value for Airlines



- ▶ ARINC Industry Activities is evolving to meet airline needs as needed by today's economic environment
- ▶ AEEC / AMC / FSEMC require your membership, commitment and support
- ▶ Your support will ensure that this important cooperation will thrive for future generations

AEEC / AMC / FSEMC — 2008 Accomplishments

- ▶ In 2008, the Leadership Committees
 - Adopted 7 new standards
 - Adopted 26 supplements to existing standards
 - Authorized 18 new projects
 - Vetted 440 questions related to resolving avionics maintenance and flight simulation issues
 - Organized numerous technical symposiums

Aerospace Standards & ARINC Standards

Table 1
Aerospace Standards by Key Standards Developing Societies
Presented at the 1st International Aerospace Standardization Workshop, Montreal, Canada, 2003

	ALA	ALAA	ARINC	ASME	ASTM	DoD	EIA/GEIA	IEEE	IPC	ISO/IEC	SAE
Avionics			177			27	10	11			28
Bearings	51				2	97				44	59
Cargo Handling	1			87	2	13				36	61
Chemical	3				27	216					73
Composites	3				4	29					487
Computing Hdwr					1	17	23	13			26
Configuration Mgmt					1	5	32	4			-
Couplings, Hoses & Tubing	136			49	13	396					1122
Data Management	2					56	2			13	-
Deicing	4					3				3	32
Drafting	6			28	1	19		2			-
Elastomers	1				6	41					187
Electrical/Electronics	155	1			2	2420	170	32	12	54	333
Environmental		1			2	14				3	81
Fabrics					11					2	-
Fasteners	2513			108	4	933				90	1079
Finishes	9				11	219					210
Fire Safety											-
Fluid Power Sys.	12					122				73	154
Fuels & Fuel Sys.	3			21	39	57					38
Ground Support Equipment	16					6				14	65
Human Factors		1			1	17	4	1			167
Information Mgmt.						22				51	-
Instrumentation	1					751				15	97
Landing Gear	3					12				8	81
Lighting	1					56					44
Lubricants	5				2	85					17
Mechanical Parts (clamps, rings, rods, knobs, etc.)	263					316					-
Metals	59				238	432				18	1351
Network/Web								10			-
Nondestructive Tests	5				27	26				6	30
Non-Metallic Materials					61	490					-
Oxygen	1				1	36					85
Packaging	59			7	6	87					28
Printed Wiring Boards						24			56		-
Propulsion Systems		3			1	23				1	244
Quality	5					19		2		13	16
Safety	5					6					40
Sealants					11	71					51
Seats	2					2					7
Software Eng.		4				13	25	17		7	33
Space Vehicles		17			3					27	-
Systems Engineering						41	3	14			-
Testing & Metrology	71	2			325	94		8	18	22	15
Totals:	3,417	29	177	300	1,321	6,685	271	110	86	495	6,571

NOTE: Totals for ALA, ALAA, ARINC and SAE are total aerospace standards developed by the society. Totals for all others (because they are not aerospace unique standards developers) are those identified as being used by The Boeing Company.

▶ Avionics Standards

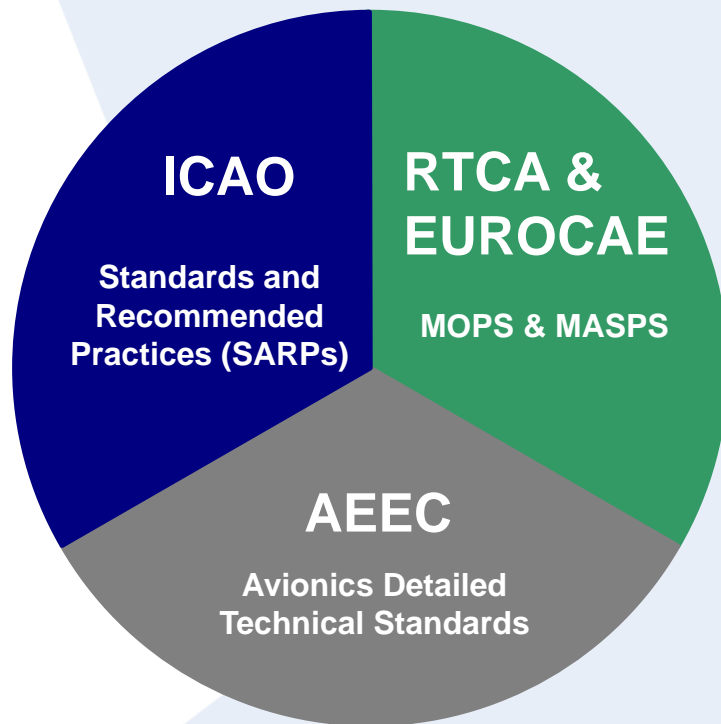
- ARINC¹ 177
- DoD 27
- EIA/GEIA 10
- IEEE 11
- SAE 28

¹ARINC Standards developed and adopted by AEEC and AMC supported by ARINC Industry Activities Secretariat

AEEC-Related Avionics and Cabin Standards Represent 75% of Current ARINC Standards

Source: The Future of Aerospace Standardization, Aerospace Industry Association of America, January, 2005, Page 9-10

Cooperation with Organizations



- ▶ ATA
- ▶ DoD
- ▶ EASA
- ▶ EUROCONTROL
- ▶ FAA
- ▶ IATA
- ▶ SAE
- ▶ WAEA

For More Information - www.aviation-ia.com



Aviation Committees

- 2008 Annual Report
- Acronym List
- Electronic Distribution
- Events Calendar
- Membership / Sponsorship Information
- Member Organization List
- Sponsor Organization List
- Other Supporting Aircraft Operators List

▶ AEEC

▶ AMC

▶ FSEMC

▶ ARINC Standards

Aviation Committees - AEEC • AMC • FSEMC: Creating Value for Aviation Through Collaboration



AEEC, AMC, and FSEMC are aviation industry activities organized by ARINC to establish consensus technical standards, known globally as ARINC Standards, and develop shared technical solutions that no one organization could accomplish independently.

- View the [2008 Annual Report](#) (pdf, 703K)
- View the [AEEC • AMC • FSEMC presentation](#) (pdf, 636K)
- View the [Industry Activities Overview](#) (pdf, 410K)

[ARINC Standards](#) and collaborative solutions improve cost effectiveness, increase productivity, and reduce life-cycle costs for airlines and their partners in the avionics, cabin system, and flight simulation and training segments of the aviation industry.

AEEC, AMC, and FSEMC are global technical activities comprised of airlines and other organizations eligible to be Member Organizations with additional support provided by Corporate Sponsors. Find out more about [AEEC, AMC, and FSEMC Memberships](#) and [Corporate Sponsorships](#).

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