AEEC

Together "We Set the Standard."

To	AEEC Members, Corporate Sponsors and Guests	**Date**	March 10, 2016
From	Paul J. Prisaznuk AEEC Executive Secretary	**Reference**	16-044/AGS-182 lth
Subject	**AEEC General Session**		
When	April 25-28, 2016		
Where	Hyatt Regency Atlanta, Georgia		

DELTA

MEETING AGENDA
AEEC General Session & AMC – Atlanta 2016

The AEEC/AMC Opening Session will convene in the Centennial ballroom at 0830 Monday.
The AEEC General Session will reconvene in the adjacent ballroom starting at 1330 Monday.

Time	Monday April 25	Tuesday April 26	Wednesday April 27	Thursday April 28
0830	**1. OPENING SESSION** • Welcome/Introductions • Keynote Address • Awards	**5. DATA COMM** 5a. DataLink Users Forum 5b. DataLink, AOC 5c. Air/Ground Comm 5d. IPS Aero	**9. SYSTEMS & ARCHITECTURES** 9a. SAI Subcommittee 9b. Surveillance, ADS-B 9c. GNSS Evolution	**AEEC Advisory Session** *AEEC ExCom Members only*
1010	Break	Break	Break	Break
1030	**2. JOINT SYMPOSIUM** *AVIONICS HEALTH MONITORING*	**6. SYMPOSIUM** *ENHANCED VISION & SYNTHETIC VISION*	**10. SYMPOSIUM** *AIRCRAFT TRACKING SPACE-BASED ADS-B*	**AEEC Advisory Session** *AEEC ExCom Members only*
1200	*Lunch – provided by AAI*			
1330	**3. CABIN SYSTEMS** 3a. Ku/Ka-Band Satcom 3b. Cabin Systems 3c. Galley Interfaces	**7. FLIGHT DECK** 7a. Flight Management 7b. Navigation Database 7c. Aeronautical Databases 7d. Cockpit Displays	**11. SPECIAL TOPICS** 11a. Data Loading 11b. Fiber Optics 11c. APEX Software	**Adjourn**
1500	Break	Break	Break	
1520	**4. SYMPOSIUM** *TRENDING IN AVIATION*	**8. NETWORKS** 8a. EFB Users Forum 8b. EFB Subcommittee 8c. NIS Subcommittee 8d. CANbus	**12. SPECIAL TOPICS** 12a. AeroMACS 12b. Flight Deck Audio 12c. Other topics [TBD]	
1800 2300	***Hospitality Suites Open*** ***Tuesday - AAI Reception - 6pm to 9pm***			

AEEC/AMC takes great pride in giving back to the local community. ***Children's Healthcare of Atlanta*** has been selected as the charity for this event. Please donate generously to this worthy cause.

AEEC EXECUTIVE COMMITTEE

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WELCOME TO ATLANTA

On behalf of ARINC Industry Activities, the AEEC Executive Committee, and our host, **Delta Air Lines**, it is my pleasure to welcome you to Atlanta.

Aviation and Atlanta go hand-in-hand. Delta's Headquarters and largest hub has been in Atlanta since 1941. From its humble beginnings in 1928 as the world's first aerial crop dusting company, Delta has grown to be one of the largest airlines in the world.

Today, Delta is one of the most admired and long-standing members of the Fortune 500 (ranked number 73 in 2015). The "stats and facts" presented by the Delta News Hub are nothing short of amazing (January 2016):

- 800 aircraft and 15,000 flights per day
- 80,000 employees
- 180 million passengers served
- 328 destinations in 57 countries
- $40.7 billion in revenue (2015)

Each day in Atlanta, Delta operates nearly 1000 scheduled flights and represents 40% of all operations at The Hartsfield-Jackson Atlanta International Airport. The airport is equipped for the massive Delta operation and it supports 32 other airlines as well. According to the Hartsfield-Jackson Atlanta Airport website:

- Since 1998 - busiest passenger airport in the world
- Since 2005 - busiest operations airport in the world
- Since 2006 - five runways, triple simultaneous landings, 237 flights per hour
- Air traffic control tower is the tallest in North America (398 feet / 121 meters)

This AEEC General Session will highlight emerging airspace initiatives, NextGen and SESAR. The agenda includes four great symposiums that you won't want to miss:

- *Avionics Health Monitoring*
- *Topics Trending in Aviation*
- *Enhanced Vision & Synthetic Vision*
- *Aircraft Tracking and Space-based ADS-B*

The AEEC provides a collaborative environment for preparing the ARINC Standards. Your inputs are most welcome and they are appreciated. In the end, the AEEC provides a product that no single organization could deliver on its own. This is what AEEC has done for over 65 years.

Paul J. Prisaznuk
AEEC Executive Secretary & Program Director
ARINC Industry Activities

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Your Badge and Registration

Welcome to Atlanta. The AEEC/AMC registration desk will be open from 2:00pm to 5:00pm on Sunday. It will be open 7:45am to 4:00pm on Monday, Tuesday, and Wednesday. If you have pre-registered for the meeting, a name tag will be ready for you. Please be prepared to provide a business card to our registration staff. This will complete the registration process.

An advance copy of the pre-registration list is available at:

http://www.aviation-ia.com/AeecAmc/index.html

Sunday Welcome Reception

A Welcome Reception will take place at the Hyatt Atlanta on Sunday, April 24 from 5:00pm to 7:00pm. All AEEC/AMC attendees and their guests are invited to attend.

Meeting Materials

This agenda and working papers for the meeting are available at: *http://www.aviation-ia.com/aeec/general_session/index.html* two weeks befor the meeting.

You are invited to download all documents and print those that you might want to refer to during the meeting. Hardcopies of meeting materials will not be available at the meeting.

Speak to the Issues

All attendees are invited to participate in the discussion on the floor. Your input will help clarify the issue at hand and assist the AEEC Executive Committee members in their decision making.

When you wish to speak to an issue, please move to one of the floor microphones. When you are recognized, please state your name and affiliation, and then proceed with your remarks. Please be aware that your comments are being recorded.

If you cannot hear someone who is speaking, use the standard “speak louder” signal, i.e., raise your hand and move it in a small horizontal circle.

Smart phone users, please set your phone to silent operation when you are in the meeting room. Side conversations should be conducted outside the meeting room, so not to disturb the discussion in progress.

AAI Reception – Tuesday Evening

The Airline Avionics Institute (AAI) cordially invites airline representatives, AAI members, and their guests to the AAI Reception to be held **Tuesday, April 26 starting at 6:00pm.**

Mr. Ray Frelk, AAI Business Manager
PO Box 320345
Franklin, Wisconsin 53132
1-941-313-0471 (mobile)
Email: ray@airlineavionics.org
AAI website: *www.airlineavionics.org*

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Atlanta Guest Program – Sponsored by Delta Air Lines

Atlanta Sightseeing

Delta Air Lines has organized two events for spouses and guests at the AEEC General Session and Avionics Maintenance Conference. Space is limited.

- Monday, April 25 – City Tour – 12:00 (lunch included)
- Tuesday, April 26 – Georgia Aquarium – 10:00 (lunch included)

For more information:

http://www.aviation-ia.com/cf/Aeec_Amc_guest.cfm

Children's Charity

The AEEC/AMC takes great pride in giving back to the local community. ***Children's Healthcare of Atlanta*** has been selected as the charity for this event. Please consider how fortunate you are to be participating in this conference and, as the basket is passed, please give generously to this worthy cause.

ARINC Industry Activities Membership

Your membership fees are used to fund the majority portion of the ARINC Standards activities. Airlines that are not yet members of ARINC Industry Activities are invited to join. Your membership enables the AEEC to prepare standards that benefit aviation at large. For more information:

http://www.aviation-ia.com/MembershipAndSponsor/index.html

ARINC Industry Activities Corporate Sponsorship

Is your organization a Corporate Sponsor? A list of Corporate Sponsors is available at the registration desk and on the ARINC Industry Activities website. If your organization has not signed-up to be an ARINC Corporate Sponsor, we invite you to do so.

Corporate Sponsorship enables you to fully participate in AEEC standards development activities, attend the AEEC/AMC conference for free, and gain access to ARINC Standards and many other valuable products. For more information:

http://www.aviation-ia.com/MembershipAndSponsor/index.html

Doing Business at the AEEC/AMC Conference

Everyone knows the AEEC General Session is an excellent place to meet valuable contacts and to conduct business. There are many opportunities for marketing presentations outside of the ballroom. Marketing and sales pitches inside the meeting rooms are prohibited.

The AEEC General Session Meeting Report

The AEEC General Session report will be available to our Members and Corporate Sponsors approximately four weeks after the meeting. Others may purchase the AEEC General Session report for a nominal fee.

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1. AEEC/AMC OPENING SESSION

MONDAY, APRIL 25 – 8:30am – HYATT REGENCY CENTENNIAL BALLROOM

- AEEC Chairman, Robert Swanson, FedEx will welcome attendees to Atlanta.
- Captain Steve Dickson, Delta Air Lines will provide the keynote address.
- The AEEC Trumbull Award will be presented by the AEEC Chairperson-Elect, Kathleen O'Brien, Boeing.
- The Volare Awards will be presented by Ray Frelk, Airline Avionics Institute (AAI).

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2. AVIONICS HEALTH MONITORING SYMPOSIUM

Monday, April 25, Starting at 10:30am

Hyatt Regency Centennial Ballroom – (AEEC/AMC Ballroom)

Moderators: Jim Lord, Delta Air Lines and Ted McFann, FedEx

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3a. Ku/Ka-Band Satellite Communications

ARINC 791, ARINC Project Paper 792, ARINC Project Paper 848
Chairman: Peter Lemme, Totaport
Secretary: Tom Munns, *thomas.munns@sae-itc.org*

APIM 14-007: Small Form Factor Ku/Ka Band Satcom System
APIM 14-008: Satcom Functional Interface Standard

Goal: The Ku/Ka Satellite Communications Subcommittee is developing standards for broadband satellite equipment hardware, electrical/electronic interfaces, and network interface protocols for installation onto all commercial transport aircraft.

Summary: The status of the following documents will be presented:

- **ARINC Project Paper 792:** *Second Generation Aviation Ku-Band and Ka-Band Satellite Communication System*, will define Ku-band and Ka-band systems in a modular manner that take advantage of technology improvements to reduce cost, weight, and complexity. Antenna installation standards will be developed that offers a simplified antenna mounting standard independent from the underlying airplane fittings or penetrations.
- **ARINC Project Paper 848:** *Broadband Satellite System Functional Interface Standard*, will define common network protocols and interfaces between broadband satcom systems and aircraft IP networks to facilitate domain separation and security. The document is expected to be applicable to multiple broadband systems. Band-specific information currently included in ARINC 791 Part 2 will be preserved.

AEEC Adoption Item: (none proposed)

APIM Approvals: AEEC will consider the following:

- **APIM 16-006:** Broadband Satellite System Installation and Equipment Interfaces proposes following work be performed:

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- o Supplement 3 to **ARINC Characteristic 791 Part 1**, will update aircraft installation provisions to be consistent with that defined in **ARINC Project Paper 792**. It will include any industry inputs viewed to be acceptable to the implementation of Ku/Ka satcom equipment.
- o Supplement 2 to **ARINC Characteristic 791 Part 2**, will provide reference to network interface definition consistent with **ARINC Project Paper 848**. It will revise aircraft antenna installation guidelines, update the Management Information Base (MIB) for Ku-band and Ka-band satcom systems. Mature drafts are expected by October 2017.

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3b. Cabin Systems Subcommittee (CSS)

ARINC 628, ARINC 664, ARINC 800, ARINC 832
ARINC Project Paper 648, ARINC Project Paper 820, ARINC Project Paper 836A
Chairman: Dale Freeman, Delta Air Lines
Co-Chairmen: Rolf Goedecke, Airbus and Gerald Lui-Kwan, Boeing
Secretary: Tom Munns, *thomas.munns@sae-itc.org*

APIM 08-011A: Cabin Enclosures Modular Rack Concept
APIM 12-004B: 10 Gb Ethernet Interface (ARINC 664P2)
APIM 13-010: 4th Generation Cabin Network (4GCN)
APIM 13-014A: Cabin Connectors and Cables
APIM 14-001: Cabin Architecture for Wireless Distribution
APIM 15-001: Cabin Passenger Seat Production Testing
APIM 15-006: Cabin Wireless Access Point (CWAP) Operational Management

Goal: The objective of this activity is to define a cost-effective cabin infrastructure that will support evolving technologies and enable airlines to install equipment that exceeds passenger expectations. This effort includes interface standards to allow airlines to implement preferred systems for their passengers. Cabin communication, broadband connectivity, wireless distribution, cabin interface protocols, and connector standardization are all components of this activity.

Summary: The status of the following documents will be reported:

- Supplement 8 to **ARINC Specification 628 Part 1:** *Cabin Management and Entertainment System – Peripherals*
- **ARINC Project Paper 648:** *Guidance for Cabin Passenger Seat Testing*
- Supplement 3 to **ARINC Specification 664 Part 2**: *Aircraft Data Network, Part 2, Ethernet Physical and Data Link Layer*
- Supplement 1 to **ARINC Specification 800, Part 2:** *Cabin Connectors and Cables: Specification of Connectors, Contacts, and Backshells*
- Supplement 1 to **ARINC Specification 800, Part 3:** *Cabin Connectors and Cables: Specification of Cables*
- **ARINC Project Paper 820:** *Cabin Architecture for Wireless Distribution System*
- Supplement 1 to **ARINC Specification 832:** *Cabin Equipment Interfaces, 4GCN Cabin Management and Entertainment System, Cabin Distribution System*
- **ARINC Project Paper 836A:** *Cabin Standard Enclosures*

AEEC Adoption Items: AEEC will consider the following:

- AEEC will consider the adoption of Draft 6 of Supplement 1 to **ARINC Specification 832:** *Cabin Equipment Interfaces, 4GCN Cabin Management and Entertainment System, Cabin Distribution System*.

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APIM Approvals: AEEC will consider the following:

- **APIM 16-005: Cabin System Interfaces** to update cabin specifications as follows:
  - Supplement 8 to **ARINC Specification 628 Part 1** to define interfaces for an Ultra High-Definition (HD) landscape camera.
  - Supplement 9 to **ARINC Specification 628 Part 2** to update applicable interfaces for USB 3.1 outlets in passenger seats.
  - Supplement 4 to **ARINC Specification 809** to update applicable interfaces for USB 3.1 outlets in passenger seats.
  - Supplement 2 to **ARINC Specification 832** to update applicable interfaces for USB 3.1 outlets in passenger seats.
  - Supplement 4 to **ARINC 628 Part 9** to update references to legacy network system components, for example, IEEE 802.11n wireless access points

Mature drafts are expected in October 2017.

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3c. Galley Insert (GAIN) Subcommittee

ARINC 810, ARINC 812A
Co-Chairman: Ralph Schnabel, Airbus
Co-Chairman: Scott Coburn, Boeing
Secretary: Tom Munns, *thomas.munns@sae-itc.org*

Goal: The GAIN Subcommittee develops and maintains standards pertaining to the physical dimensions and electrical interfaces to galley Inserts. The primary areas for standardization include:

- Form and Fit
- Standard wiring
- Electrical connectors
- Interfaces, both physical and data
- Galley mounting rails

Summary: A status report will be provided. Since the last AEEC General Session, the GAIN Subcommittee has completed work on Supplement 5 to **ARINC Specification 810**. This supplement defines a new Size 6 galley insert to accommodate installation of microwave ovens. Suggestions for future work in the galley area will be sought.

AEEC Adoption Item: (none proposed)

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4. TRENDING IN AVIATION

SYMPOSIUM

Monday, April 25 – Starting at 3:20pm

Hyatt Regency Centennial III – AEEC Ballroom

Moderator: Kathleen O'Brien, Boeing

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ADJOURN MONDAY

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AEEC GENERAL SESSION

TUESDAY, APRIL 26 – 8:30am – CENTENNIAL III BALLROOM

5a. Datalink Users Forum

Co-Chairman: Colin Gallant, British Airways
Co-Chairman: Brian Gleason, Southwest Airlines
Secretary: Vic Nagowski, *vnagowsk@sae-itc.org*

Goal: The Datalink (DLK) Users Forum promotes continuous improvements to datalink system performance in a way that maximizes the operational benefit to the user community.

Summary: Colin Gallant and Brian Gleason will summarize the DLUF activities and its future plans. The DLUF provides coordination among airlines and cargo carriers, civil aviation authorities, air traffic service providers, aircraft manufacturers, avionics suppliers, datalink service providers, and other interested parties.

Economic benefits are obtained through the exchange of technical information and through the resolution of common problems. The DLUF monitors the direction and schedule of Air Traffic Service (ATS) datalink programs. Airline feedback is desired.

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5b. Datalink Systems, MIAM and AOC Message Exchange

ARINC 618, ARINC 631, ARINC 633, ARINC 841
DLK Chairman: Bob Slaughter, American Airlines
AOC Chairman: Dirk Zschunke, Lufthansa German Airlines
Secretary: José Godoy, *jose.godoy@sae-itc.org*

APIM 09-001A: Media Independent Aircraft Messaging (MIAM) – ARINC 841
APIM 10-013A: VHF Digital Link Mode 2 Implementation Provisions – ARINC 631
APIM 11-011A: AOC Air-Ground Data and Message Exchange Format – ARINC 633
APIM 13-013: Air/Ground Character-Oriented Protocol – ARINC 618

Goal: Develop and maintain Datalink (DLK) standards that improve communications between the aircraft and ATS, DLK Service Providers (DSP), and other DLK Ground Users. The Subcommittee meets jointly with RTCA SC-214 VDL Subgroup and EUROCAE WG-92.

Summary: Bob Slaughter, American Airlines, will summarize the activities of the DLK Systems Subcommittee, including the following documents:

- Supplement 8 to **ARINC Specification 618:** *Air/Ground Character-Oriented Protocol Specification,* was developed with the goal of improving ACARS performance, and specifically to enable GOLD RCP240 and RSP180 operational requirements to be met at 99.9%. Satisfying RCP240 and RSP180 is essential for obtaining 30/30 preferential airspace separation.
- **ARINC Specification 631:** *VHF Digital Link (VDL) Mode 2 Implementation Provisions* specifies the VHF Digital Link needed to exchange air-ground bit-oriented data. Supplement 7 is being defined in support of multi-frequency operation in Europe and USA. Pending European investigations, the following will be added to the document:
    - Expansion of Frequency Management Sections (Recovery and Handoff)
    - Guidance on the allocation of VDLM2 ground stations
    - Channel utilization definition
    - Message sequence charts updates
    - Ground requirements necessary to support avionics

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- **ARINC Specification 633** defines AOC communications for aircraft types. AOC messaging applications (e.g., Flight Plan, Weather, Weight and Balance) can be hosted on various avionics, e.g., Electronic Flight Bag (EFB). Supplement 3 will add Organized Tracks, Drift Down Summary, and Load Sheet XML schemas. Existing Flight Plan, ETOPs, MEL, and NOTAM schemas will be expanded. Load Sheet development is coordinated with the IATA Load Control Working Group. The schedule for completion will be discussed.
- Supplement 3 to **ARINC Specification 841:** *Media Independent Aircraft Messaging (MIAM)*, enables the exchange of large volume of data over ACARS or broadband IP subnetworks. The existing standard specifies MIAM over ACARS, and MIAM over IP middleware. Supplement 3 improves data comm air/ground negotiations. The DLK Subcommittee has prepared a mature draft of Supplement 3,

AEEC Adoption Items: AEEC will consider the following:

- Supplement 8 to **ARINC Specification 618:** *Air/Ground Character-Oriented Protocol Specification*
- Supplement 3 to **ARINC Specification 841:** *Media Independent Aircraft Messaging (MIAM)*

APIM Approvals: AEEC will consider the following:

- **APIM 16-007 – ARINC 622 ATS Data Link Applications** proposes an ATS wind service to enable the transmission of wind and temperature gradient information to the aircraft from an Air Traffic Control Center (ATCC). This will support the FANS 3 Interval Management and 4D trajectory function.

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5c. Air/Ground Communications Systems (AGCS)

ARINC Project Paper 771
Chairman: Kenny Blankenship and Robert Holcomb, American Airlines
Secretary: José Godoy, *jose.godoy@sae-itc.org*

APIM 13-011: Low-Earth Orbiting (LEO) Satcom System – ARINC Project Paper 771

Goal: The Air/Ground Communications Systems (AGCS) Subcommittee develops aircraft satellite communications (satcom) standards that meet airline operational requirements.

Summary: A summary of AGCS Subcommittee activities will be presented, including the status of the following documents:

- **ARINC Project Paper 771:** *Low-Earth Orbiting Aviation Satellite Communication System,* contains aircraft installation provisions for the Iridium NEXT/Certus satcom system. This includes commonality with the existing Inmarsat SwiftBroadband (SBB) satcom installation provisions. Cyber security guidance is provided.
    - Form factor (2 MCU) and connectors (similar to SBB)
    - Low Gain Antenna (LGA) and Active Low Gain Antenna (ALGA)
    - Satellite data unit (SDU) interwiring and connections
    - Interwiring between SDU and antenna
- **ARINC Characteristic 781:** *Aviation Satellite Communication Systems,* defines the existing Inmarsat SBB satcom installation. Aircraft installations are proceeding and the document will be updated to reflect current installation considerations.

AEEC Adoption Item: AEEC will consider the following:

- **ARINC Project Paper 771:** *Low-Earth Orbiting Aviation Satellite Communication*

APIM Approvals: AEEC will consider the following:

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- **APIM 13-011A: ARINC 771 Iridium NEXT Satcom** proposing the definition of a high-gain antenna intended to support faster data rates than the basic system.
- **APIM 16-003: ARINC 781 Satcom (SBB)** proposing a security overlay for SBB services.

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5d. Internet Protocol Suite (IPS) for Aeronautical Safety Services

ARINC Project Paper 658
Co-Chairman: Luc Emberger, Airbus
Co-Chairman: Greg Saccone, Boeing
Secretary: Paul Prisaznuk, *pjp@sae-itc.org*

APIM 15-004: Internet Protocol Suite for Aeronautical Safety Services

Goal: Develop a roadmap for the introduction of an Internet Protocol Suite (IPS) in air/ground communication systems considering the current air/ground infrastructure and the need for information security.

Summary: A status report will be provided. This project is expected to improve data communication technologies used for NextGen and SESAR airspace initiatives and, in turn, provide a number of benefits to airlines, airframe manufacturers, and avionics suppliers. Airline benefits are expected to accrue in the form of improved data communication performance compared to ACARS and ATN.

Step 1 – Roadmap for Standardization and Main Architecture Impacts of IPS

ARINC Project Paper 658: *Internet Protocol Suite (IPS) for Aeronautical Safety Services - Roadmap Document* is under development. The document will describe the roadmap for the standardization of IPS and the timeline for elements to be standardized. It will also identify the proper Standards Development Organization (SDO), to develop and/or update new standards e.g., ARINC, RTCA, EUROCAE, ICAO. This will include an identification of IPS requirements (performance, information security) and a description of the avionics architecture impacts. A mature draft is expected in 2017.

Step 2 – Development of an ARINC Standard for IPS

A follow-on activity will be discussed. It is expected that an ARINC Standard will be prepared to define the avionics architecture, functions, and an IPS profile.

AEEC Adoption Item: (none proposed)

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6. ENHANCED VISION & SYNTHETIC VISION SYSTEMS SYMPOSIUM

Tuesday, April 26, Starting at 10:30am

Hyatt Regency Centennial III Ballroom

Moderator – Robert Swanson, FedEx

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7a. Flight Management Systems (FMS)

ARINC 702A
Chairman: Mike Bakker, GE Aviation
Secretary: Paul Prisaznuk, *pjp@sae-itc.org*

APIM 15-005: ARINC 702A Advanced Flight Management Computer System

Goal: Flight Management Computer Standards for emerging airspace requirements are being developed to take advantage of advancements in Communication, Navigation and Surveillance (CNS), all with the collective goal to increase the capacity and efficiency of the airspace.

Summary: A status report will be provided. **ARINC Characteristic 702A:** *Advanced Flight Management Computer System*, is being updated to support NextGen and SESAR airspace initiatives. It is expected that Supplement 5 will be aligned to the applicable RTCA/EUROCAE standards in support of Performance-Based Navigation (PBN) and Trajectory Based Operations (TBO).

Many of the NextGen/SESAR evolutions are discussed in ARINC Report 660B and part of the larger CNS/ATM initiatives. These include enhanced datalink, satellite-based approach procedures, airport moving map and guidance, and electronic flight bags. Other evolutions include graphical user interfaces (ARINC 661) and software partitioning (ARINC 653). This project is expected to provide a number of benefits to airlines. These include user-preferred trajectories, fuel savings, environmental benefits, and capacity improvements.

AEEC Adoption Item: (none proposed)

7b. Navigation DataBase (NDB)

ARINC 424
Chairman: Chuong Phung, FedEx
Secretary: Sam Buckwalter, *sam.buckwalter@sae-itc.org*

APIM 11-005A: Navigation DataBase

Goal: The scope of this project is to identify, evaluate, and document the necessary standards for the preparation of airborne navigation system reference data for use in the air transport industry. This includes current standards using traditional ASCII encoding methods and future standards using a Unified Modelling Language (UML).

Summary: A summary report will be provided on activities to update **ARINC Specification 424**: *Navigation System Database*.

- ARINC Specification 424 includes current Navigation Database updates in ACSII form.
- Future work on ARINC 424 is expected to include a UML model for all types of navigation data. This model is being defined to support the future versions of ARINC 424.

AEEC Adoption Item: AEEC will consider the following:

- Draft 6 of Supplement 21 to **ARINC Specification 424:** *Navigation System Database*

APIM Approval: AEEC will discuss the following:

- **APIM 11-005B:** Preparation of draft Supplement 22 to **ARINC Specification 424:** *Navigation System Database*

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7c. Aeronautical Databases - Airport, Terrain and Obstacle Database

ARINC 814 and ARINC 816
ARINC Project Paper 813, ARINC Project Paper 815
Chairman: Brian Gilbert, Boeing
Secretary: Peter Grau, *peter.grau@sae-itc.org*

APIM 12-006: Terrain and Obstacle Database Definition

Goal: Aeronautical database standards are expected to improve pilot situational awareness in flight and enable future development of synthetic vision. This will improve safety and reduce fuel burn, resulting in lower operating costs.

Summary: A summary of ADB Subcommittee activities will be presented, including the status of the following documents:

- **ARINC Project Paper 813:** *Embedded Interchange Format for Terrain Database* will be presented. The document is intended to define an open encoding format for terrain data that is directly loadable into airborne systems.
- **ARINC Project Paper 815:** *Embedded Interchange Format for Obstacle Database* will be presented. The document is intended to define an open encoding format for obstacle data that is directly loadable into airborne systems.

The ARINC Standards will be aligned to the latest versions of:

- **RTCA DO-276B/EUROCAE ED-98:** *User Requirements for Terrain and Obstacle Data*
- **RTCA DO-291C/ EUROCAE ED-119:** *Interchange Standards for Terrain, Obstacle and Aerodrome Mapping Data*.

AEEC Adoption Item: AEEC will consider the following:

- **Change 1 to ARINC Specification 816-2:** *Embedded Interchange Format for Airport Mapping Database.* When published, this document is expected to coexist with other versions of the same document that may have additional capabilities specified.
- **Draft 4 of Supplement 3 to ARINC Specification 816:** *Embedded Interchange Format for Airport Mapping Database*. When published, this document will incorporate validation test results and changes dictated by Change 1 to ARINC Specification 816-2.

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7d. Cockpit Display Systems (CDS) Interfaces

ARINC 661
Chairman: Chad Weldon, Rockwell-Collins
Secretary: Peter Grau, *peter.grau@sae-itc.org*

APIM 08-004B: ARINC 661 Cockpit Display System Interface Standard

Goal: Prepare flight deck display interface standards for new airplane development programs that focus on transport category aircraft: business, regional, general aviation, and military aircraft.

Summary: A summary report of CDS Subcommittee activities will be provided, including the status of the following documents:

- Supplement 6 to **ARINC Specification 661:** *Cockpit Display System Interface to User Systems, Part 1, Avionics Interfaces, Basic Symbology, and Behavior* is intended to ensure growth for CNS/ATM applications that provide advanced operational concepts that will increase aviation safety, capacity, and efficiency. This particular supplement will add touchscreen, synthetic vision and three-dimensional vision capabilities.

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- **ARINC Project Paper 661:** *Cockpit Display System Interfaces to User Systems, Part 2, User Interface Markup Language for Graphical User Interfaces*

AEEC Adoption Item: AEEC will consider the following:

- Draft 2 of Supplement 6 to **ARINC Specification 661:** *Cockpit Display System Interface to User Systems*

APIM Approvals: AEEC will consider the following:

- **APIM 08-004C:** Supplement 7 to **ARINC Specification 661:** *Cockpit Display System Interface to User Systems* is expected to add new capabilities including Widget Structure Meta Definition, Three Dimensional projection, and others. Continued work on **ARINC Project Paper 661:** *Cockpit Display System Interfaces to User Systems, Part 2, User Interface Markup Language for Graphical User Interfaces* is part of this proposal.

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8a. Electronic Flight Bag (EFB) Users Forum

Co-Chairman: Phillip Haller, Austrian Airlines
Co-Chairman: Will Ware, Southwest Airlines
Secretary: Peter Grau, *peter.grau@sae-itc.org*

APIM 09-009B: Electronic Flight Bag (EFB) Users Forum

Goal: The joint AEEC EFB Users Forum and IATA EFB Task Force provides a venue where interested parties can exchange information, present challenges, and resolve issues being confronted by the industry with this rapidly evolving technology. It coordinates the development of EFB capabilities among airlines, manufacturers, suppliers, and regulators.

Summary: A report of the EFB Users Forum activities will be presented. Topics include:

- Operator Experiences
- EFB System Architectures
- EFB Installation and Connectivity
- EFB Applications and Content Management
- EFB Security
- Regulatory Issues

Next EFB Users Forum: The next meeting will be hosted by Lufthansa Systems on May 25-26, 2016 in Munich, Germany. An EFB EXPO will be held May 24, 2016.

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8b. Electronic Flight Bag (EFB) Subcommittee

ARINC 834
Co-Chairman: Sonja Schellenberg, Lufthansa
Co-Chairman: Maurice Ingle, American Airlines
Secretary: Peter Grau, *peter.grau@sae-itc.org*

APIM 11-012C: Supplement 6 to **ARINC Specification 834:** *Aircraft Data Interface Function (ADIF)*

Goal: The EFB Subcommittee develops standards applicable to EFB installation. These encompass all classes of EFBs that may be utilized by the airlines on multiple aircraft types.

Summary: Sonja Schellenberg will summarize the activities of the EFB Subcommittee, including a status report on the following documents:

- Supplement 6 to **ARINC Specification 834:** *Aircraft Data Interface Function (ADIF).* It describes the capability to prepare and send ACARS messages for media independent transfer to the ground.

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AEEC Adoption Item: AEEC will consider the following:

- Draft 1 of Supplement to 6 to **ARINC Specification 834:** *Aircraft Data Interface Function*

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8c. Network Infrastructure and Security (NIS)

ARINC Project Paper 822A and ARINC Project Paper 852
Chairman: Steve Arentz, United Airlines
Secretary: Vanessa Mastros, *vanessa.mastros@sae-itc.org*

APIM 13-003A: On-Ground Aircraft Wireless Communication
APIM 13-005: IP Security Data Logging

Goal: Prepare aircraft network and information security standards that can support traditional avionics, information technology systems and ground support services.

Summary: The status of the following documents will be presented:

- **ARINC Project Paper 822A:** *On-Ground Aircraft Wireless Communication* provides updated guidance on Gatelink services using broadband communications systems and Internet Protocols (IP), for example, Wi-Fi and cellular. This document includes cyber security guidelines to ensure the connection is accessed only by authorized users.
- **ARINC Project Paper 852:** *Guidance for Security Data Logging in an IP Network Environment* is intended to provide guidance for collecting security data logs from aircraft networks. This document is intended to establish a common set of security related data elements and format(s) that can be used by Airline IT and/or avionic supplier ground tools in the analysis of aircraft security log file data.

AEEC Adoption Item:

- **ARINC Project Paper 822A:** *On-Ground Aircraft Wireless Communication*

APIM Approvals AEEC will consider the following:

- **APIM 16-004:** ARINC 842 Digital Certificate Guidance - Supplement 2

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8d. CANbus

ARINC 825
Chairman: Thomas Joseph, GE Aviation
Secretary: Tom Munns, *thomas.munns@sae-itc.org*

APIM 13-004C: Supplement 4 to **ARINC Specification 825**: CANbus

Goal: Update CANbus standards to support new aircraft programs and major retrofit programs.

Summary: The status of the following document will be presented:

- Supplement 4 to **ARINC Specification 825:** *General Standardization of CAN (Controller Area Network) Bus Protocol for Airborne Use* is expected to include the following:
  - CANbus with Flexible Data-Rate (FD)
  - Timing, Bandwidth Management, Latency, and Jitter
  - Common latency methodology
  - Wire level protocols (physical layer parameters)
  - Protocol and service implementation conformance matrix

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AEEC GENERAL SESSION

WEDNESDAY, APRIL 27 – 8:30AM – HYATT REGENCY CENTENNIAL III BALLROOM

9a. Systems Architecture and Interfaces (SAI) Subcommittee

Co-Chairman: Bob Semar, United Airlines
Co-Chairman: Reinhard Andreae, Lufthansa
Secretary: Paul Prisaznuk, *pjp@sae-itc.org*

Goal: NextGen and SESAR airspace initiatives are driving the need for the SAI Subcommittee to develop avionics architecture recommendations and new communications mediums for aircraft in service and for future airplane types.

Summary: The SAI Subcommittee is coordinating the development of standards for CNS/ATM. This effort builds on the recommendations of **ARINC Report 660B:** *CNS/ATM Avionics Architectures Supporting NextGen/SESAR Concepts*. ARINC Report 660B identifies the need to update **ARINC Characteristic 702A:** *Advanced Flight Management Computer System* and other ARINC Standards to meet NextGen and SESAR airspace requirements.

SAI Subcommittee activities include:

- Reviewing aircraft data network architectures
- Considering the need for avionics software quality and reliability standards
- Monitoring global aircraft tracking initiatives
- Providing recommendations on the need for new ARINC Standards.

APIM Discussion:

The SAI Subcommittee has been the focal point for discussing new project proposals and building industry consensus leading to the development of new ARINC Standards. Ten project proposals have been reviewed in the first quarter of 2016

In particular, Lufthansa has proposed **APIM 16-001:** Software Quality and Reliability. The main themes are as follows:

- Improve software quality by defining and standardizing software quality parameters, availability of function and reliability.
- A second element is to provide guidelines on how to prepare product support agreements in a way that uses the quality parameters to improve software quality and reliability.

Airline feedback is desired.

The next SAI Subcommittee meeting will be held June 14-16, 2016 at EUROCONTROL.

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9b. Traffic Surveillance, ADS-B

Chairman: Jessie Turner, Boeing
Secretary: José Godoy, *jose.godoy@sae-itc.org*

Goal: Develop and maintain traffic surveillance standards to enhance flight crew situational awareness and ensure safety.

Summary: A status report of industry activities, including RTCA SC-147 and RTCA SC-186, will be provided. ADS-B applications enhance safety, enable efficient Air Traffic Management,

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augment flight crew situational awareness, and facilitate time and fuel saving operation at optimum altitudes and flight paths.

ARINC Characteristic 735B-2: *Traffic Computer TCAS and ADS-B Functionality,* was published in 2015. Supplement 2 adds Hybrid Surveillance functionality that satisfies FAA AC 20-151B and TSO-119d requirements. Future work program will be discussed.

AEEC Adoption Item: (none proposed)

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9c. Global Navigation Satellite System (GNSS)

The evolution of Global Navigation Satellite System (GNSS) satellite constellations will be discussed. AEEC will consider the need for changes to GPS equipment to support this evolution. A report will be provided. Questions and comments from the floor are invited.

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10. AIRCRAFT TRACKING INITIATIVES

SPACE-BASED ADS-B

Wednesday, April 27, Starting at 10:30am

Hyatt Regency Centennial III – AEEC Ballroom

Moderator: Mario Araujo, TAP Portugal

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11a. Software Data Loading

ARINC 665
ARINC Project Paper 844, ARINC Project Paper 849
Co-Chairman: Ted Patmore, Delta Air Lines
Co-Chairman: Rod Gates, American Airlines
Secretary: Scott Smith, *scott.smith@sae-itc.org*

APIM 10-016B: Target Implementation Considerations for ARINC 615-3 and ARINC 615-4 Hardware Targets
APIM 13-007: Shop Loading of Software – Software data loading specification requirements for the avionics shop environment
APIM 15-003: Supplement 4 to ARINC Report 665, Loadable Software Standards

Goal: Develop and maintain software data loading standards that will minimize resources and the time required to securely transfer databases and software to an aircraft.

Summary: A summary of SDL Subcommittee activities will be provided, including the status of the following documents:

- Supplement 4 to **ARINC Report 665:** *Loadable Software Standards* was updated to include changes supported by the software data loading community as follows:
  - Manufacturer's Codes and Assignment
  - Software Load File naming
  - Header File Definition
  - Rules for CRC Calculation

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- **ARINC Project Paper 844:** *Guidance for Target Hardware Design, Part 1, Airborne Computer High Speed Data Loader (ARINC 615-3)* provides guidance for Hardware Target developers that use ARINC 429 data load paths per the ARINC 615-3 standard. The growing use of mass storage devices are driving the need for new processes and new standards.
- **ARINC Project Paper 844:** *Guidance for Target Hardware Design, Part 2, Airborne Computer High Speed Data Loader (ARINC 615-4)* provides guidance for Hardware Target developers that implement ARINC 429 data load paths per the ARINC 615-4 standard. The growing use of mass storage devices are driving the need for new processes and new standards.
- **ARINC Project Paper 849:** *Avionics Shop Loading of Line Replaceable Units* will provide guidelines that are expected to enable shop loading of aircraft software parts. Modern avionics may require stimulus from other systems to allow operational or database loading, and must be emulated in an avionics repair facility environment.

AEEC Adoption Items: AEEC will consider the following:

- Supplement 4 to **ARINC Report 665:** *Loadable Software Standards*
- **ARINC Project Paper 844:** *Guidance for Target Hardware Design, Part 1, Airborne Computer High Speed Data Loader (ARINC 615-3)*
- **ARINC Project Paper 844:** *Guidance for Target Hardware Design, Part 2, Airborne Computer High Speed Data Loader (ARINC 615-4)*

APIM Approval: AEEC will consider the following:

- **APIM 16-002: Common Software Data Loading Standards**

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11b. Fiber Optic Interfaces

ARINC 801 through ARINC 807
ARINC Project Paper 845, ARINC Project Paper 846
Chairman: Robert Nye, Boeing
Secretary: Scott Smith, *scott.smith@sae-itc.org*

APIM 13-008: Fiber Optic Expanded Beam Technology
APIM 13-009: Fiber Optic Mechanical Transfer Technology

Goal: The goal is to develop and maintain ARINC Standards (801-807) that address physical characteristics, design guidelines, component criteria, and testing and maintenance procedures for fiber optic components and interfaces. The objective is to promote a high-level of fiber optic interface performance while minimizing the costs of procurement, installation, and maintenance. The standards describe the latest technological advances for the use of fiber optics independent of the aircraft application or environment.

Summary: A summary of FOS activities will be provided, including the status of the following documents:

- **ARINC Project Paper 845:** *Fiber Optic Expanded Beam Termini.* This project defines a fiber optic Expanded Beam (EB) contact for use in connectors with frequent disconnect/connect operations and/or in harsh environments. A mature draft has been prepared.
- **ARINC Project Paper 846:** *Fiber Optic Mechanical Transfer Termini.* This project intends to define a fiber optic Mechanical Transfer contact for use in connectors with frequent disconnect/connect operations and/or in harsh environments.

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A subsequent effort to update existing ARINC Standards 801 through 807 will be discussed. This will include new material describing the design, testing, installation, and maintenance of connectors and cables. The updated documents may include:

- Supplement 4 to **ARINC Specification 801:** *Fiber Optic Connectors*
- Supplement 3 to **ARINC Specification 802:** *Fiber Optic Cables*
- Supplement 4 to **ARINC Report 803:** *Fiber Optic Design Guidelines*
- Supplement 2 to **ARINC Report 804:** *Fiber Optic Active Device Specification*
- Supplement 5 to **ARINC Report 805:** *Fiber Optic Test Procedures*
- Supplement 6 to **ARINC Report 806:** *Fiber Optic Installation and Maintenance*
- Supplement 4 to **ARINC Report 807:** *Fiber Optic Training Requirements*

AEEC Adoption Item: AEEC will consider the following:

- Draft 3 of **ARINC Project Paper 845:** *Fiber Optic Expanded Beam Termini*

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11c. Application/Executive (APEX) Software Interface

ARINC 653
Co-Chairman: Frederic Aspro, Airbus
Co-Chairman: Gordon Putsche, Boeing
Secretary: Scott Smith, *scott.smith@sae-itc.org*

APIM 08-003B: Avionics Application Software Standard Interface

Goal: Develop and maintain **ARINC Specification 653:** *Avionics Application Software Standard Interface* that defines a standard interface between avionics application software and Real Time Operating Systems (RTOS).

Summary: ARINC 653 is used extensively on civil and military aircraft produced by Airbus, Boeing, and others. Avionics suppliers have expressed the desire to use ARINC 653 RTOS on regional, business, and private aircraft. ARINC 653 enables application software to be developed concurrently and independent of the RTOS. This will enable avionics functional updates to be made with minimal impact on the underlying computing platform.

A status report will be provided on the following:

- **ARINC Specification 653:** *Part 0, Overview of ARINC 653*
- **ARINC Specification 653:** *Part 1, Required Services*
- **ARINC Specification 653:** *Part 2, Extended Services*
- **ARINC Specification 653:** *Part 3A, Conformity Test Specification for Required Services*
- **ARINC Specification 653:** *Part 3B, Conformity Test Specification for Extended Services*
- **ARINC Specification 653:** *Part 4, Subset Services*
- **ARINC Specification 653:** *Part 5, Core Software Recommended Capabilities*

AEEC Adoption Item: (none proposed)

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12a. AeroMACS

ARINC Project Paper 766
Chairman: Tom McGuffin, Honeywell
Secretary: Jose Godoy, *jose.godoy@sae-itc.org*

APIM 11-013A: Airport Surface Communication using AeroMACS

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Goal: Develop traditional form, fit, function and interface standards for airborne radio equipment compatible with Aeronautical Mobile Airport Communications System (AeroMACS) infrastructure expected to be deployed at the airport terminal for airport surface communication.

Summary: A report of AeroMACS Working Group activities will be provided. High-speed data communication services on the airport surface is part of the SESAR Master Plan and the NextGen Implementation Plan. AeroMACS has the potential to support new applications in safety and non-safety services. APIM 11-013A calls for the development of an AeroMACS radio standard capable of supporting:

- **RTCA DO-345:** *Aeronautical Mobile Airport Communications System (AeroMACS) Profile*
- **RTCA DO-346:** *Minimum Operational Performance Standards (MOPS) for the Aeronautical Mobile Airport Communication System (AeroMACS)*

A schedule for completion will be discussed.

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12b. Flight Deck Audio

Secretary: Peter Grau, *peter.grau@sae-itc.org*

APIM 12-003: Headset and Boom Microphone

Goal: The goal is to update pin assignments on the headset XLR-7 connector.

Summary: Supplement 1 to **ARINC Specification 535B:** *Lightweight Headset and Boom Microphone* proposes changes to the pin assignments on the new XLR-7 connector to align them with the first five pins of the legacy XLR-5 connector.

AEEC Adoption Item: AEEC will consider the following:

- Draft 1 of Supplement 1 to **ARINC Specification 535B:** *Lightweight Headset and Boom Microphone*

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12c. Other Topics

The AEEC Chairman will entertain any other topics of discussion from the floor.

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13. Announcements and Adjournment

The dates and location of the 2017 AEEC/AMC will be announced.

The AEEC Chairman will adjourn the AEEC General Session.

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AEEC ADOPTION ITEMS – ATLANTA					
Agenda Item	**Activity**	**Reference**	**Title**	**Pink Pages**	**Adopted Yes/No**
3b	CSS	16-019/CSS-575	Draft 6 of Supplement 1 to **ARINC Specification 832:** *Cabin Equipment Interfaces, 4GCN Cabin Management and Entertainment System, Cabin Distribution System*		
5b	DLK	15-160/DLK-134	Draft 3 of Supplement 8 to **ARINC Specification 618:** *Air/Ground Character-Oriented Protocol Specification*		
5b	DLK	16-005/DLK-135	Draft 2 of Supplement 3 to **ARINC Specification 841:** *Media Independent Aircraft Messaging (MIAM)*		
5c	AGCS	16-042/AGCS-093	Draft 6 of **ARINC Project Paper 771:** *Low-Earth Orbiting Aviation Satellite Communication System*		
7b	NDB	16-028/NDT-168	Draft 6 of Supplement 21 to **ARINC Specification 424:** *Navigation Database*		
7c	ADB	16-035/ADB-039	Draft 1 of Change 1 to **ARINC Specification 816-2:** *Embedded Interchange Format for Airport Mapping Database*		
7c	ADB	16-036/ADB-040	Draft 4 of Supplement 3 to **ARINC Specification 816:** *Embedded Interchange Format for Airport Mapping Database*		
7d	CDS	16-037/SAI-036	Draft 2 of Supplement 6 to **ARINC Specification 661:** *Cockpit Display System Interface to User Systems, Part 1, Avionics Interfaces, Basic Symbology, and Behavior*		
8b	EFB	16-038/EFB-058	Draft 1 of Supplement 6 to **ARINC Specification 834:** *Aircraft Data Interface Function (ADIF)*		
8c	NIS	16-029/NIS-065	Draft 4 of **ARINC Project Paper 822A:** On-Ground Aircraft Wireless Communication		

AEEC ADOPTION ITEMS – ATLANTA					
Agenda Item	**Activity**	**Reference**	**Title**	**Pink Pages**	**Adopted Yes/No**
11a	SDL	16-030/SDL-102	Draft 5 of Supplement 4 to **ARINC Report 665:** *Loadable Software Standards*		
11a	SDL	16-039/SDL-103	Draft 2 of **ARINC Project Paper 844:** Guidance for Target Hardware Design, Part 1, Airborne Computer High Speed Data Loader (ARINC 615-3)		
11a	SDL	16-040/SDL-104	Draft 3 of **ARINC Project Paper 844:** Guidance for Target Hardware Design, Part 2, Airborne Computer High Speed Data Loader (ARINC 615-4)		
11b	FOS	16-041/FOWG-168	Draft 3 of **ARINC Project Paper 845:** *Fiber Optic Expanded Beam Termini*		
12b	DAD	16-032/DAD-022	Draft 1 of Supplement 1 to **ARINC Characteristic 535B:** *Lightweight Headset and Boom Microphone*		

AEEC PROJECT PROPOSALS – APIMs				
Agenda Item	**Proposed Activity**	**APIM Number**	**APIM Description**	**Approved Yes/No**
3a	KSAT	16-006	ARINC 791 Ku/Ka Satcom, Parts 1 and 2	
3b	CSS	16-005	ARINC 628 Cabin System Equipment Interfaces	
5b	DLK	16-007	ARINC 622 ATS Winds Definition, Supplement 5	
5c	AGCS	13-011A	ARINC 771 LEO SatCom (NEXT), Supplement 1	
5c	AGCS	16-003	ARINC 781 Mark 3 SatCom (SBB), Supplement 7	
7b	NDB	11-005B	ARINC 424 Navigation Data Base, Supplement 22	
7d	CDS	08-004C	ARINC 661 CDS, Supplement 7 and Part 2	
8c	NIS	16-004	ARINC 842 Digital Certificate Guidance, Supplement 2	
9a	SAI	16-001	Avionics Software Quality and Reliability (new 8xx)	
11a	SDL	16-002	Common Standards for Software Data Loading (new 6xx)	