AEEC

Together "We Set the Standard."

To	Aviation Industry	**Date**	May 21, 2018
From	P. J. Prisaznuk AEEC Executive Secretary pjp@sae-itc.org tel +1 240-334-2579	**Reference**	18-070/AXX-214 kpp

Subject **AEEC Work Program for 2018 - 2019**
Approved at the AEEC General Session
April 23-25, 2018 - Dallas, Texas

Summary Adding to the ARINC Standards presently in development, the AEEC Executive Committee approved eleven project proposals at the AEEC General Session in Dallas:

- **11-005C** Initiation of Supplement 23 to ARINC Specification 424: Navigation System Database (NDB)
- **15-001A** New ARINC Project Paper 648: Guidance for Cabin Passenger Seat Testing
- **16-011A** Initiation of Supplement 2 to ARINC Specification 800: Cabin Cables and Connectors for Cabin Bus
- **17-006A** New ARINC Project Paper 840A: EFB Application Software Control Interface for Tablet Devices
- **17-014** Initiation of Supplement 8 to ARINC Specification 834: EFB Aircraft Data Interface Function
- **17-015** New ARINC Project Paper 8xx: EFB Server with Aircraft Interface Device
- **18-001** New ARINC Project Paper 8xx: Fifth Generation Cabin Network (5GCN), plus related Supplements
- **18-002** LTE and Ligado Protection to Satcom Equipment Defined by ARINC 741, ARINC 761, ARINC 781
- **18-003** New ARINC Project Paper 8xx: Integrated Radio Architecture Framework for Communication, Navigation, and Surveillance (CNS) Radios
- **18-004** Initiation of Supplement 5 to ARINC Report 665: Loadable Software Standards
- **18-005** Initiation of Supplement 1 to ARINC Specification 843: Loadable Software Configuration Reporting

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The statement of work for each of these projects is attached to this document in the form of an APIM (ARINC Proposal to Initiate/Modify an ARINC Standard).

Invitation This letter informs the industry of the AEEC Executive Committee actions and serves as an invitation for all interested parties to participate in ARINC Industry Activities.

For additional information on the AEEC work program, contact the AEEC Executive Secretary or visit the AEEC website: *www.aviation-ia.com/activities/aeec*.

cc AEEC Executive Committee, AGCS, CSS, DLUF, EFB, EFB Users, NDB, SAI, SDL

Attachment 1

Attachment 1

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project — APIM 11-005C

Navigation Data Base (NDB) / ARINC 424

This APIM updated by NDB Subcommittee on February 8, 2018. It proposes the development of Supplement 23 to ARINC Specification 424: Navigation System Database defining both ASCII and XML.

1.1 Name of Originator & Organization

NDB Subcommittee

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

NDB Subcommittee

Choung Phung, FedEx

2.2 Support for the activity (as verified)

Airlines: Delta, FedEx, Lufthansa, United,

Airframe Manufacturers: Airbus, Boeing

Suppliers: Jeppesen, LIDO, **NavBlue**, **AeroNavData,** Rockwell Collins, Honeywell, Universal, GE Aviation, Garmin, NGA, MITRE

Others: TBD

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines:

Airframe Manufacturers:

Suppliers: Honeywell, Jeppesen, LIDO, **Navblue, AeroNavData**, NGA

Others: TBD

2.4 Recommended Coordination with other groups

SAI Subcommittee, AMDB Subcommittee

3.0 Project Scope

The project will identify, evaluate, and document the recommended standards for the preparation of airborne navigation system reference data for use in the air transport industry. This data is intended for merging with existing airborne navigation computer operational software to produce a navigation data base for use onboard the aircraft. This scope recommends **Supplement 23** to ARINC Specification 424 to support new navigation procedures.

3.1 Description

The NDB Subcommittee will continue to update ARINC 424 to support recommended standards for airborne navigation systems. The group will continue the maturation of the XML schema and supporting the ASCII format.

3.2 Planned usage of the envisioned specification

Use the following symbol to check yes or no below. ☒

New aircraft developments planned to use this specification yes ❑ no☒

Airbus: (aircraft & date)

Boeing: (aircraft & date)

Other: (manufacturer, aircraft & date)

Modification/retrofit requirement yes ❑ no☒

Specify: (aircraft & date)

Needed for airframe manufacturer or airline project yes ❑ no☒

Specify: (aircraft & date)

Mandate/regulatory requirement yes ☒ no ❑

Program and date: (program & date)

Is the activity defining/changing an infrastructure standard? yes ❑ no☒

Specify (e.g., ARINC 429)

When is the ARINC standard required?

The NDB Standard is a dynamic document and will need to be continually updated to maintain interoperability between new and older ATS procedures and FMS cockpit implementations.

What is driving this date? _____ (state reason) _____

Are 18 months (min) available for standardization work? yes ❑ no ☒

If NO please specify solution: The Subcommittee will need to meet once a year to continue work on the developing standard.

Are Patent(s) involved? yes ❑

If YES please describe, identify patent holder: _____

3.3 Issues to be worked

See item 3.1

4.0 Benefits

4.1 Basic benefits

Operational enhancements yes ☒ no ❑

For equipment standards:

a. Is this a hardware characteristic? yes ❑ no ☒

b. Is this a software characteristic? yes ❑ no ☒

c. Interchangeable interface definition? yes ☒ no ❑

d. Interchangeable function definition? yes ☒ no ❑

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes ☒ no ❑

Specify: _____

Product offered by more than one supplier yes ☒ no ❑

Identify: (company name)

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

There is universal support among airlines, manufacturers, and regulatory

authorities for the preparation of regular updates to ARINC Specification 424. One of the key benefits of this project is the continued interoperability between new and older ATS procedures and FMS procedures. Significant additional benefits are expected from the reduced separation standards and the increased availability of user-preferred routing that will result from the development of RNP RNAV procedures.

Other avionics systems on the aircraft, in addition to FMS, use ARINC 424.

4.2.2 Benefits for Airframe Manufacturers

See item 4.2.1

4.2.3 Benefits for Avionics Equipment Suppliers

See item 4.2.1

5.0 Documents to be Produced and Date of Expected Result

ARINC Specification 424 is a dynamic document that requires frequent update. The most current version of the document is ARINC 424-22.

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Supplement 23 to ARINC 424	6	18	Oct 2018	Date 2021

6.0 Comments

The NDB Subcommittee meets roughly every 10 to 12 months.

6.1 Expiration Date for this APIM

April 2021

Attachment 2

Attachment 2

ARINC IA Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 15-001A

ARINC Project Paper 648: *Cabin Seat Production Testing Requirements and Recommended Practices for Cabin Seat Production Testing*

2.0 Subcommittee Assignment and Project Support

2.1 Identify AEEC Group

Cabin Systems Subcommittee (CSS)

2.2 Support for the activity

Airlines: Delta Air Lines

Airframe Manufacturers: Airbus, Boeing

Suppliers: Panasonic Avionics, Thales, Lumexis, KID, Zodiac, BE Aerospace, Astronics, BAE Systems

2.3 Commitment for resources

Airlines: Delta

Airframe Manufacturers: Airbus, Boeing

Suppliers: Panasonic Avionics, Thales, Lumexis, KID, Zodiac, BE Aerospace, Astronics, BAE Systems

2.4 Chairmen:

Chairman: Dale Freeman, Delta
Co-Chairmen: Gerald Lui-Kwan, Boeing and Fritz Urban, Airbus

2.5 Recommended Coordination with other groups

None

3.0 Project Scope

This project will define requirements and recommended practices for seat testing to be performed at the seat manufacturers facilities prior to the shipment of the seats to the airframe manufacturers, MRO, or operators for installation in the aircraft.

ARINC Project Paper 8xx will define guidance for production testing of seats and seat groups at the seat suppliers' facilities so that fully tested seats and seat groups will be received at the airframe manufacturer assembly lines, MRO, or at the operator facility for modifications.

3.1 Description

Development of guidelines to test seats and seat groups to ensure that installed equipment has been interconnected and integrated correctly and is operational when shipped for installation in the aircraft.

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes☒ no ❑

Airbus: A320NEO, A330NEO

Boeing: 777X, 737MAX

Modification/retrofit yes☒ no ❑

Airbus: A320, A330, A340, A350, A380

Boeing: 737NG, 747-400, 747-8, 757, 767, 777, 787

Needed for airframe manufacturer or airline project yes ☒ no ❑

The timetable for this project is mainly driven by the development time needed to provide a mature definition. Introduction is not linked to a specific aircraft project. Introduction can be done as soon as possible to get the advantages of this report.

Mandate/regulatory requirement yes ❑ no ☒

Program and date:

Is the activity defining/changing an infrastructure standard? yes ❑ no ☒

When is the ARINC standard required? October 2016

What is driving this date? Aircraft development schedules.

Are 18 months (min) available for standardization work? Yes ☒ no ❑

If NO please specify solution: _____

Are Patent(s) involved? yes ❑ no ☒

If YES please describe, identify patent holder: _____

3.3 Issues to be worked

- Develop testing that assures interconnected LRUs in the seat operate in an integrated fashion
- Develop proposed test concepts and plans to assure that the seats are operational as described above
- Delineate roles and responsibilities of the parties involved in seat integration

4.0 Benefits

The benefit is the reduction in the cost of seat installation and rework in the aircraft.

4.1 Basic benefits

Operational enhancements yes ☒ no ❑

For equipment standards:

a. Is this a hardware characteristic? yes ❑ no ☒

b. Is this a software characteristic? yes ❑ no ☒

c. Interchangeable interface definition? yes ❑ no ☒

d. Interchangeable function definition? yes ❑ no ☒

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes ❑ no ☒

Specify:

Product offered by more than one supplier yes ☒ no ❑

Identify: Recaro, B/E Aerospace, Sogerna, Jamco, Zodiac

4.2 Specific project benefits

The new document will provide requirements and recommended practice for production testing of seats and seat groups after completion to ensure operational seats and seat groups when delivered for installation in an aircraft.

4.3 Benefits for Airlines

The delivery of aircraft to the airlines is not delayed due to troubleshooting and rework of passenger seats. Also benefits the airlines during modification efforts in eliminating rework of new passenger seats during installation.

4.4 Benefits for Airframe Manufacturers

Airframe manufacturers minimize the impact of seat related issues during cabin furnishing phase and ensure in-time delivery.

4.5 Benefits for Seat and Seat Equipment Suppliers

Seat and system suppliers minimize troubleshooting and rework when seats are delivered tested and functional to the airframe manufacturers.
Harmonized and generally accepted basic test requirements reduce the time and cost for the seat equipment suppliers and seat manufacturers.

5.0 Documents to be Produced and Date of Expected Result

New ARINC Project Paper 648

6.0 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
New ARINC Project Paper 648	5*	*	May 2015	~~Oct 2016~~ Oct 2019

***NOTE:** This effort will take place as partial-day sessions within the regularly scheduled CSS meetings. In addition, web conferences will be arranged between CSS meetings to review action items and the draft material.

6.1 Expiration Date for this APIM

~~October 2016~~ October 2019

7.0 Comments

None

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 3

Attachment 3

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 16-011A

Next-Generation Cabin Equipment Network Bus **(ARINC PP 854)**

1.1 Name of Originator and/or Organization

Cabin Systems Subcommittee (CSS)

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Cabin System Subcommittee (CSS)

Dale Freeman, Delta Air Lines

2.2 Support for the activity (as verified)

Airlines: Delta, TAP Portugal, United

Airframe Manufacturers: Airbus, Boeing

Suppliers: Amphenol, Astonics, Diehl, Esterline, ITT Cannon, KID Systeme, Lumexis, Molex, Panasonic, Rockwell-Collins, Radiall, Souriau, TE Connectivity, Thales, W. L. Gore, Zodiac Seats France, Zodiac, ZII

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Delta

Airframe Manufacturers: Airbus, Boeing (TBC)

Suppliers: Amphenol, Astronics, Diehl, Esterline, ITT Cannon, KID Systeme, Lumexis, Molex, Panasonic, Rockwell-Collins, Radiall, Souriau, TE Connectivity, Thales, W. L. Gore, Zodiac Seats France, Zodiac, ZII

2.4 Recommended Coordination with other groups

NIS Subcommittee, SAI Subcommittee

3.0 Project Scope (why and when standard is needed)

3.1 Description

ARINC Specification 485 defines a standard bus and messaging protocol used extensively for cabin equipment. However, ARINC 485 has outlived its usefulness. Originally intended for status and simple ON/OFF control, this bus does not provide adequate performance for current and emerging equipment with more sophisticated controls and smart microcontrollers. A higher performance networking alternative is needed. The alternative definition must consider minimizing conductors for the LAN, maximizing data throughput, and leveraging of existing COTS LAN technologies.

The CSS investigated and discussed trade-offs among proven, commercial solutions. The determination was that IEEE 802.3bw, which is a single twisted pair 100 Mbps Ethernet link was the best alternative.

This APIM authorizes the following activities:

- Develop Supplement 4 to ARINC Specification 664 Part 2 to define the physical and network layers for 100BaseT1 and 1000BaseT1 Ethernet,

based on IEEE 802.3 bw (100BaseT1) and 802.3 bp (1000BaseT1). 100BaseT1 supports full duplex 100 Mbps performance over a single twisted pair. There are proven components available from multiple sources. 1000BaseT1 is a relatively new capability with promise for future performance enhancement.

- Develop a new ARINC Project Paper 8xx to define a new data bus applicable to cabin systems, initially for the following cabin functions:
  (1) In-Seat Network. Define physical interface (connectors and cabling), electrical interfaces, bus protocols, and messaging protocols for an Ethernet in-seat network, including seat equipment components such as electronic control unit, seat actuator controller, seat electronics, and in-seat lighting. The messaging protocols will expand on similar messaging developed for communications between seat components in ARINC 485 Part 2.
  (2) Cabin Lighting System Interfaces. Define standard physical interfaces (connectors and cabling), electrical interfaces, bus protocols, and messaging protocols for Ethernet networks for lighting system components.
- Consider developing a “legacy mode” to be used via the new physical layer to allow existing LRUs to maintain the currently-defined ARINC 485 messaging for seat elements.
- **Develop Supplement 2 to ARINC Specification 800: Cabin Connectors and Cables, Part 2, Specification of Connectors, Contacts, and Backshells to include connectors to support a 100BASE-T1 network (IEEE 802.3 bw), and a 1000BASE-T1 network (IEEE 802.3 bp).**
- **Develop Supplement 2 to ARINC Specification 800: *Cabin Connectors and Cables, Part 3, Specification of Connectors, Contacts, and Backshells* to include wires and cabling to support a 100BASE-T1 network (IEEE 802.3 bw), and a 1000BASE-T1 network (IEEE 802.3 bp).**

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes ☒ no ☐

Airbus: all new

Boeing: B777X (in-seat network)

Modification/retrofit requirement yes ☐ no ☒

Specify: Airlines are retrofitting cabin systems into their existing fleets.

Needed for airframe manufacturer or airline project yes ☒ no ☐

Specify: driven by the need to provide common definitions for the airplane programs and retrofit programs

Mandate/regulatory requirement yes ☐ no ☒

Program and date: No mandate

Is the activity defining/changing an infrastructure standard? yes ☐ no ☒

Specify:

When is the ARINC Standard required? Per aircraft program

What is driving this date? Aircraft Development Schedules

Are 18 months (min) available for standardization work? yes ☒ no ☐

If NO, please specify solution: Not applicable

Are Patent(s) involved? yes ☐ no ☒

If YES please describe, identify patent holder: Not applicable

3.3 Issues to be worked

- Definition of standard Ethernet physical layer for commercial aircraft applications
- Definition of standard IP network layer for commercial aircraft applications
- Connectors and cabling and electrical interfaces for an Ethernet in-seat network
- Bus protocols for in-seat equipment, similar to ARINC 485, Part 2
- Connectors and cabling and electrical interfaces for Ethernet networking for lighting components
- Bus protocols for lighting system components
- Network security considerations

4.0 Benefits

4.1 Basic benefits

Operational enhancements yes ☒ no ☐

For equipment standards:

(a) Is this a hardware characteristic? yes ☐ no ☒

(b) Is this a software characteristic? yes ☐ no ☒

(c) Interchangeable interface definition? yes ☒ no ☐

(d) Interchangeable function definition? yes ☒ no ☐

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes ☒ no ☐

Product offered by more than one supplier yes ☒ no ☐

Identify:

4.2 Specific project benefits (Describe overall project benefits.)

A higher-performance data bus to cabin peripherals using the same universal interface would support implementation of new, smarter systems while reducing development cost and time to implement new functions.

Definition of bus implementation for in-seat networks and cabin lighting would preclude custom network implementations, reduce design and development time, and simplify integration testing for these components.

4.2.1 Benefits for Airlines

- Equipment interoperability between suppliers
- Reduction in development cost, improved reliability, and therefore reduced cost for the airlines

4.2.2 Benefits for Airframe Manufacturers

- Equipment interoperable between suppliers
- Flexibility and reduced costs by working from the same set of guidelines
- Reduction of time and cost for new developments due to reuse of proven solutions

4.2.3 Benefits for Avionics Equipment Suppliers

- Eliminates the need to design custom provisions for each installation
- Reduction of time and cost for new developments due to reuse of proven solutions

5.0 Documents to be Produced and Date of Expected Result

- Supplement 4 to ARINC Specification 664 Part 2
- ARINC Project Paper 8XX

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)*	Expected Start Date	Expected Completion Date
~~Supplement 4 to ARINC 664P2~~	~~6~~	~~18~~	~~Oct 2016~~	~~Mar 2018~~
Supplement 2 to ARINC 800, Part 2				Mar 2019
Supplement 2 to ARINC 800, Part 3				Mar 2019
ARINC Project Paper 8XX	6	18	Nov 2016	Mar 2019

* Meeting days reflect CSS meetings responsible for multiple ARINC Standards. In addition to the in-person meetings identified above, web conferences will be called to support specific project goals.

6.0 Comments

ARINC Specification 800 Parts 2 and 3 may need to be updated to define connector and cable components necessary for a new cabin bus. Should this be the case, this APIM will be updated to reflect the scope and schedule changes.

6.1 Expiration Date for this APIM

April 2019

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 4

Attachment 4

ARINC Project Initiation/Modification (APIM)

1. Name of Proposed Project **APIM 17-006A**

~~Supplement 3 to~~ ARINC Specification 840**A**: Electronic Flight Bag (EFB) Application Control Interface (ACI) Standard **for tablet EFB**.

Software specification only yes ☑ no ☐

2. Subcommittee Assignment and Project Support

2.1 Identify AEEC group

Electronic Flight Bag (EFB) Subcommittee.

2.2. Support for the activity

Organizations: Airbus, American Airlines, Astronautics, Astronics, Boeing, British Airways, Comply365, Delta Air Lines, FedEx, Jeppesen, L2 Aviation, Lextech, Lufthansa Airlines, Lufthansa Systems, PACE, Rockwell Collins, Sabre, Southwest Airlines, TAP Portugal Teledyne, Thales Avionics, UPS, United Airlines, UTC Aerospace, [others, TBI]

2.3. Commitment for resources (directly from participant)

Organizations: Airbus, American Airlines, Astronautics, Astronics, Boeing, British Airways, Comply365, Delta Air Lines, FedEx, Lextech, Lufthansa Airlines, Lufthansa Systems, PACE, Rockwell Collins, Sabre, Southwest Airlines, Teledyne, United Airlines, UTC Aerospace, [others, TBI]

2.4. Recommended Coordination with other groups

The following activities are relevant to this topic:

- ARINC 633 AOC Messaging Application
- ARINC 759 Aircraft Interface Device (AID)
- ARINC 828 Electronic Flight Bag (EFB)
- ARINC 834 Aircraft Data Interface Function (ADIF)

3. Project Scope

3.1 Description

The software components installed on an EFB can be distinguished either as being underlying system software (e.g. operating system or system services such as input / output service) or as being applications for specific purposes (e.g. electronic charting, document viewers, technical logbooks).

ARINC Specification 840 presently defines a standard for the Application Control Interface (ACI) that exists between the Application Control Component (ACC) software and EFB applications in all classes of EFB. The standard is intended for implementation by each ACC software provider and each EFB application developer. It provides the means to launch and control applications on different EFB platforms without change to any other EFB system software, “Main Menu” application, or the application itself.

The rapid acceptance and deployment of low cost, mobile COTS tablets and smartphones has revolutionized EFB development in commercial aviation. This has led to numerous developers providing unique applications intended to address single tasks. Airline operators in turn, select various applications which, although well suited for their specific task, may not function well together and are difficult to use in concert. The goal of this APIM is to provide a new standard that provides a unified user experience for the application based, tablet EFB environment most airlines operate in today.

Material on the following topics will be added to the standard:

- Inter-application navigation for users
- Blending of multiple applications into a single workflow
- Single data entry with data shared across applications

3.2. Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes ☐ no ☑

New avionics equipment for major retrofit programs yes ☐ no ☑

Mandate/regulatory requirement yes ☐ no ☑

Please specify program and date: Not Applicable

Modification/retrofit requirement yes ☐ no ☑

Please specify: Not Applicable

Airframer and/or airline projects to use this specification yes ☑ no ☐

Once established, it is expected to be used by airframer and/or airline projects using EFB ACC or application software.

Is the infrastructure standard for the aircraft defined? yes ☑ no ☐

When is the ARINC standard required?

Are 18 months (min) available for standardization work? yes ☑ no ☐

If ‘No’ please specify solution:

Patent(s) involved? yes ☐ no ☑

If ‘Yes’ please describe:

There are no known patents, however, the objective of the proposal is to reach an industry consensus on a standard, and this could involve conflicts with existing proprietary non-standard interfaces.

3.3. Issues to be worked

The main issues are:

- Application to application workflow, data sharing, and navigation
- Interface to be hardware and architecture agnostic
- Interface to be operating system independent

4.0 Benefits

4.1. Basic benefits

Ability to efficiently run and utilize different EFB applications on a single platform.

Operational enhancements (reduction in DOC?) yes ☑ no ☐

Form, Fit, Function, (FFF) standard (HW and/or SW):

a. ARINC 600 form (only HW) yes ☐ no ☑

b. Interchangeable fit (plug, mount, SW loading interface, etc) yes ☐ no ☑

c. Interchangeable function yes ☑ no ☐

If not fully interchangeable, please explain:

Interface and protocol standard only, since H/W will not be addressed yes ☑ no ☐

Please specify: The purpose of this proposed project is to establish a standard definition for application control for the mobile COTS tablet and smartphone environment.

Product offerable from more than one supplier (competitive environment) yes ☑ no ☐

Please identify: The purpose of this proposed project is to establish an open standard that can be referenced by multiple application developers and implemented by any supplier.

4.2 Specific project benefits

- EFB applications that meet the ACI standard will integrate seamlessly.
- Published standard will enforce common understanding for all EFB application suppliers.
- EFB application developers will benefit from having consistent and recognized inter-application standards regardless of operating system.

4.3 Benefit for Airlines

- Being able to efficiently run different applications on COTS tablet EFBs.
- A wider selection of applications that would support this standard.
- Lower integration cost, time, and risk.
- Reduced training requirements for an integrated set of applications rather than separate isolated applications.
- Better and more consistent integration of applications leading to better user acceptance.

4.4 Benefit for Airframe Manufacturers

- Flexibility to add new applications / functionality to the aircraft
- Reduced integration time to verify new applications

4.5 Benefit for EFB Equipment and Application Suppliers

- Flexibility to add new applications

- Reduced integration time to validate new applications
- Reduced integration for third party developers to integrate on different COTS EFB platforms and aircraft specific hardware.
- Single data entry removes hurdles to new EFB application adoption as the number of applications available continues to grow.
- Applications will be inter-operable across different COTS EFBs.

5. Documents to be Produced and Date of Expected Result

~~Supplement 3 to~~ ARINC Specification 840**A**: Electronic Flight Bag (EFB) – Application Control Interface (ACI) Standard - April 201**9**~~8~~

6. Meetings/Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg Days (Total)	Expected Start Date	Expected Completion Date
~~Supplement 3 to~~ ARINC 840**A**	~~4~~	2 x 1(w/EFBUF) 2 x 3 (dedicated) 8 total days	June 201**8**~~7~~	April 201**9**~~8~~

6.1 Expiration date for this APIM

October 2019~~8~~

7. Comments

(none)

Attachment 5

Attachment 5

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 17-014

New ARINC Standard Aircraft Data Interface Function (ADIF) for EFB Software Applications or Supplement 8 to ARINC Specification 834: Aircraft Data Interface Function (ADIF).

Revision per AEEC 2018: *This interface is intended to reside within the EFB device.*

Software specification only yes ☑ no ☐

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group

Electronic Flight Bag (EFB) Subcommittee.

2.2 Support for the activity (as verified)

Organizations: Alaska Airlines, American Airlines, El Al, FedEx, Lufthansa Airlines, Qantas, Southwest Airlines, United Airlines, Airbus, Boeing, Astronautics, Astronics Ballard Technology, Avionica, CMC Electronics, Gulfstream Aerospace, Lextech, Lufthansa Systems, Rockwell Collins, Sabre, SITA, Teledyne, Ultramain, UTC Aerospace Systems, Viasat, Thales, Jeppesen [others, TBI]

2.3 Commitment for Resources (directly from participant)

Organizations: American Airlines, FedEx, Lufthansa, Southwest, Airbus, Boeing, Astronics Ballard Technology, Astronautics, Avionica, CMC Electronics, Gulfstream Aerospace, Rockwell Collins, Sabre, SITA, Teledyne, UTC Aerospace Systems [others, TBI]

2.4 Recommended Coordination with other groups

The EFB Subcommittee will coordinate other subcommittees as needed.

The following activities might be relevant to this topic:

- ARINC Specification 429
- ARINC Characteristic 717
- ARINC Specification 619: ACARS Protocols for Avionic End Systems
- ARINC Characteristic 759: Aircraft Interface Device (AID)
- ARINC Specification 840: Electronic Flight Bag (EFB) Application Control Interface (ACI) Standard

3.0 Project Scope

3.1 Description

The goal is to eliminate the need for end-system application developers to write separate data interfaces for different AIDs (as is currently the case), depicted in Figure 1, and to also not be required to provide conversion from raw input data (e.g., ARINC 429 labels) to Engineering units.

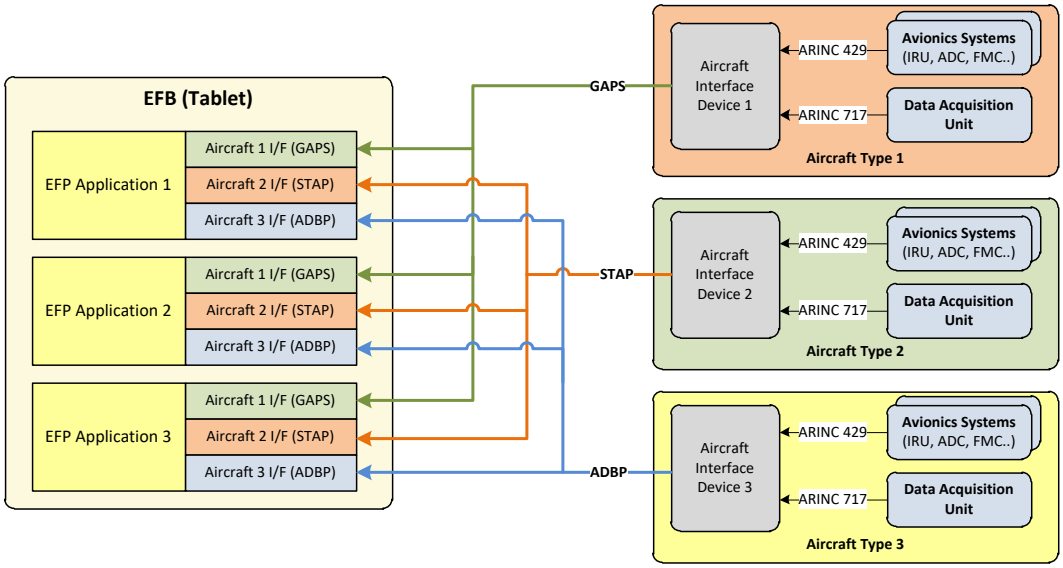


Figure 1: Too many interfaces between EFB applications and aircraft systems.

The primary intent of this APIM is to resolve of this problem of three standardized protocols for Aircraft Data Interface Function (GAPS, STAP and ADBP defined in ARINC 834). This requires evaluation of possible solution approaches to identify the operationally most suitable solution for the airlines.

In the event it is determined that the best solution is the definition of a new standard, then the goal of this standard is to define an API that is simple in nature, through which EFB applications access data provided by aircraft systems. In the future this new aircraft data API may need to be extended to also include interface definitions to other aircraft services such application hosting or IP-based communication services based on evolving operational needs.

A new such standard may be defined independently from the current ARINC 834 ADIF standard and is meant to focus on the EFB software interface level only. As such the envisaged standard may NOT intend to define any details on how this new interface will functionally relate to existing standards such as ARINC 834.

Figure 2 illustrates this API concept for current and envisioned future operational needs.

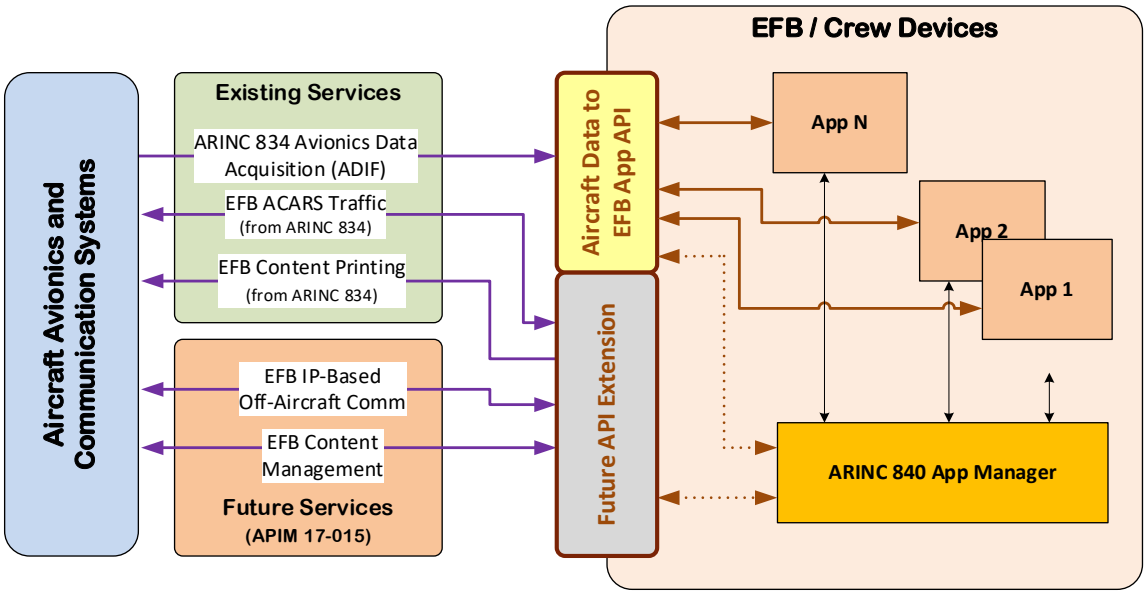


Figure 2: EFB Application Aircraft Data API Concept with possible future extension

3.2 A key consideration during the proposed work is to arrive at a cost-effective solution which does not result in unwanted duplication of existing standards. Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes ☐ no ☒

New avionics equipment for major retrofit programs yes ☐ no ☒

Mandate/regulatory requirement yes ☐ no ☒

Program and date: (program & date) Not Applicable

Modification/retrofit requirement yes ☐ no ☒

Specify: Not Applicable

Airframer and/or airline projects to use this specification yes ☒ no ☐

Once established, it is expected to be used by airframer and/or airline projects using avionics data parameters.

Is the infrastructure standard for the aircraft defined? yes ☒ no ☐

Are 18 months (min) available for standardization work? yes ☒ no ☐

If NO please specify solution: _____

Are Patent(s) involved? yes ☐ no ☒

If YES please describe, identify patent holder: _____

3.3 Issues to be worked

EFB application suppliers are finding the need to develop multiple interface for connectivity with various AID solutions. This need is likely due to three different protocol choices being defined in ARINC 834 plus data may be presented in Engineering units or in raw ARINC 429/717 representation requiring the application to perform respective conversions. This represents an extra burden onto application developers in terms of development and software maintenance effort. This APIM aims at addressing this situation to allow applications developers to focus on a single interface implementation and thus to achieve true interoperability.

4.0 Benefits

4.1 Basic benefits

The main benefit of a new ARINC Standard 8xx or Supplement 8 to ARINC 834 is to define a single EFB end-system application to aircraft data interface to be developed and maintained by application developers, which reduces development time and software maintenance overhead while at the same time represents a significant step towards achieving interoperability.

Operational enhancements (reduction in DOC?) yes ☒ no ☐

Form, Fit, Function, (FFF) standard (HW and/or SW):

(a) ARINC 600 form (only HW) yes ☐ no ☒

(b) Interchangeable fit (plug, mount, SW loading interface, etc.) yes ☐ no ☒

(c) Interchangeable function yes ☒ no ☐

If not fully interchangeable, please explain:

(d) API standard only, since H/W will not be addressed yes ☒ no ☐

(e) Product offered by more than one supplier yes ☒ no ☐

The purpose of this proposed project is to establish an open standard that can be implemented by any supplier.

4.2 Specific project benefits

- Minimize the overall cost of implementing EFB applications by defining a single API that is simple to implement.
- Enable the use of software applications developed by third parties.

4.2.1 Benefits for Airlines

This new ARINC Standard 8xx or Supplement 8 to ARINC 834 will provide several benefits to Airlines:

- Airlines would benefit from lower integration costs, times, and risks.
- Better and more consistent integration of applications leads to better user acceptance.

4.2.2 Benefits for Airframe Manufacturers

- Provide guidance to implement EFB to aircraft systems interface.

4.2.3 Benefits for EFB Equipment and Application Suppliers

- Facilitate communication from EFB and aircraft systems

5.0 Documents to be Produced and Date of Expected Result

New ARINC Project Paper 8xx or Supplement 8 to ARINC Specification 834: Aircraft Data Interface Function (ADIF) by no later than AEEC General Session 2020.

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above. This activity will be undertaken by the EFB Subcommittee. Monthly teleconferences will be held between face to face meetings to maintain progress.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Develop new ARINC Standard 8xx or Supplement 8 to ARINC Specification 834	*6*	*2x1 (w/EFBUF)* *4x3 (dedicated EFB SC)* *14 total days*	*July 2018*	*April 2020*

Please note the number of meetings, the number of meeting days, and the frequency of web conferences to be supported by the ARINC IA staff.

6.0 Comments

None.

6.1 Expiration Date for the APIM

May 2020

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 6

Attachment 6

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 17-015

ARINC Specification 8xx: *Aircraft Server, Communications, and Interface Standard* to provide file server capability, data storage capacity, and broadband connectivity.

Software specification only yes ☑ no

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Electronic Flight Bag (EFB) Subcommittee.

2.2 Support for the activity

Organizations: Alaska Airlines, American Airlines, El Al, FedEx, Lufthansa Airlines, Qantas, Southwest Airlines, United Airlines, Airbus, Boeing, Astronautics, Astronics Ballard Technology, Avionica, CMC Electronics, Gulfstream Aerospace, Lextech, Lufthansa Systems, Rockwell Collins, Sabre, SITA, Teledyne, Ultramain, UTC Aerospace Systems, Viasat [others, TBI]

2.3 Commitment for resources (directly from participants)

Organizations: American Airlines, FedEx, Lufthansa, Southwest, United, Airbus, Boeing, Astronautics, Avionica, CMC Electronics, Gulfstream Aerospace, Rockwell Collins, Sabre, SITA, Teledyne, UTC Aerospace Systems [others, TBI]

2.4 Recommended Coordination with other groups

The EFB Subcommittee will coordinate with NIS and Ka/Ku Band Subcommittee

The following activities are relevant to this topic:

- ARINC Specification 619 ACARS Protocols for Avionic End Systems
- ARINC Characteristic 759: Aircraft Interface Device (AID)
- ARINC Specification 834: Aircraft Data Interface Function (ADIF)
- ARINC Specification 840: Electronic Flight Bag (EFB) Application Control Interface (ACI) Standard
- ARINC Specification 841: Media Independent Aircraft Messaging (MIAM)
- ARINC Project Paper 848: Broadband Satellite System Functional Interface Standard

3.0 Project Scope (why and when standard is needed)

3.1 Description

The original ARINC Characteristic 759, published in July 2014, was defined when the tablets were becoming popular as EFB devices. Server, data storage, and off-aircraft communications were not considered. The strong proliferation of tablet EFBs, operational experience gained, and industry demand for server, data storage and off-aircraft communication capabilities requires that this new specification be developed.

Functional characteristics and requirements have evolved with many airlines expressing a need to include data storage, file and application server functions, and broadband communication capabilities. The application server needs result from application developers preferring CPU intensive applications that may not be executed on tablets.

Consequently, this APIM is aimed at reviewing airlines' expectations regarding functional requirements and defining a new standard that reflects changes in the industry.

In particular, the proposed work encompasses the definition of a new type of airborne server to provide services to support to EFB and other such peripherals. This new server is envisioned to offer the following principal functions

a) Avionics Data Interface Service
b) Apply ACARS Messaging and EFB Content printing function currently defined in ARINC 834 by migrating these respective specifications into this new standard
c) Define file server /
d) Define Application/service server capabilities.
e) Define data storage requirements
f) Define interface type functions/provisions to enable EFB/Crew devices to utilize on-board IP-Based communication systems (e.g. K/L-Band, Cellular phone, Air-to-Ground)
g) Add information security related aspects specific to EFB leveraging of ARINC PP848 where deemed applicable.

A conceptual depiction of this new type of server is depicted in Figure 1.

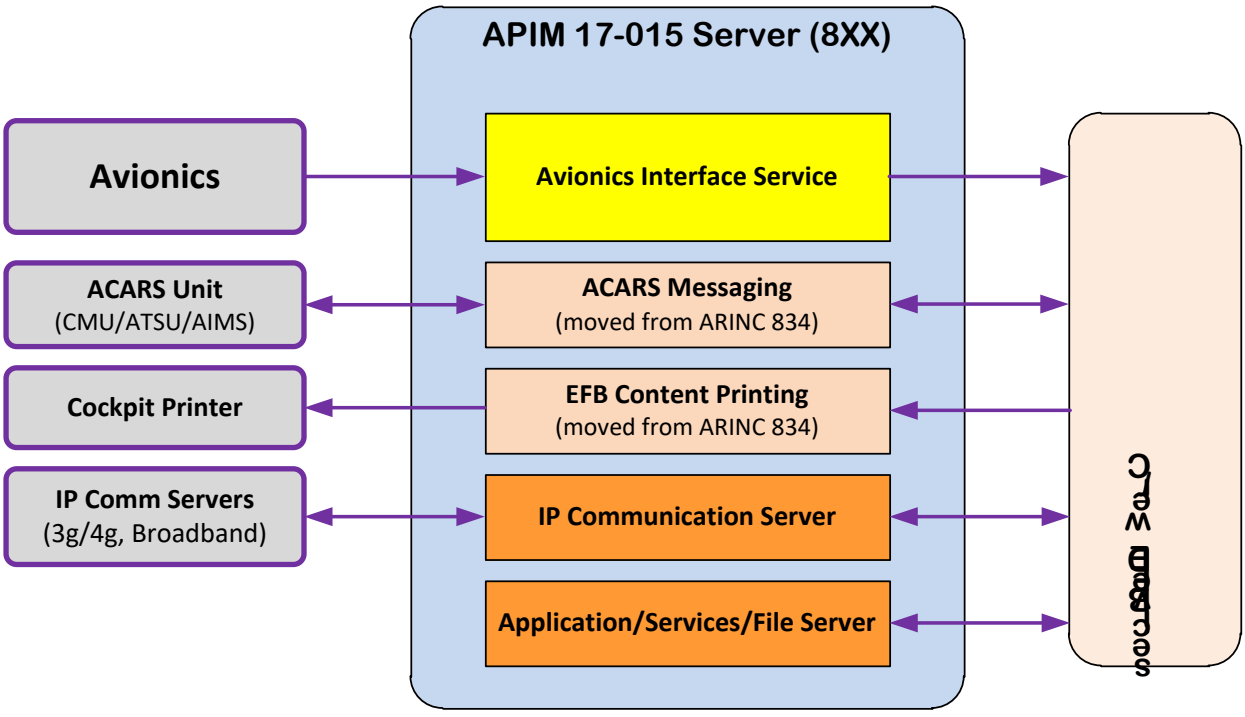


Figure 1: Key Crew Device Server Functions

3.2 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes ☒ no ☐

New avionics equipment for major retrofit programs yes ☐ no ☒

Mandate/regulatory requirement yes ☐ no ☒

Please specify program and date: Not Applicable

Modification/retrofit requirement yes ☐ no ☒

Please specify: Not Applicable

Airframer and/or airline projects to use this specification yes ☒ no ☐

Once established, it is expected to be used by airframer and/or airline projects using avionics data parameters.

Is the infrastructure standard for the aircraft defined? yes ☒ no ☐

Are 18 months (min) available for standardization work? yes ☒ no ☐

If 'No' please specify solution:

Patent(s) involved? yes ☐ no ☒

If 'Yes' please describe:

3.3 Issues to be worked

This standard is expected to cover these topics:

- Review and refine AID functional aspects
- Add file server / application server function
- Add new interfaces for broadband communications systems
- Add data storage capabilities
- Provide guidance on information security

4.0 Benefits

4.1 Basic benefits

The envisioned Specification will:

- Clarify hardware details necessary to claim compliance
- Address specifics to use of tablet EFB, including server capabilities
- Migrate the ACARS Messaging end EFB Content print services currently defined ARINC 834 into this new specification
- Include a stronger communication link interface aspects including broadband systems
- Address data storage needs
- Address related security aspects unique to EFB communication.

Operational enhancements (reduction in DOC?) yes ☒ no ☐

Form, Fit, Function, (FFF) standard (HW and/or SW):

(a) ARINC 600 form (only HW) yes ☐ no ☒

(b) Interchangeable fit (plug, mount, SW loading interface, etc.) yes ☒ no ☐

(c) Interchangeable function yes ☒ no ☐

If not fully interchangeable, please explain:

(d) Interface and protocol standard only, since H/W will not be addressed yes ☒ no ☐

(e) Product available from more than one supplier (competitive environment) yes ☒ no ☐

The purpose of this proposed project is to establish an open standard that can be implemented by any supplier.

4.2 Specific project benefits

- Facilitate the adoption of a standardized AID/application server.

4.2.1 Benefits for Airlines

This standard will provide several benefits to Airlines:

- Airlines would benefit from lower integration costs, times, and risks.
- Better and more consistent integration of applications leads to better user acceptance.

4.2.2 Benefits for Airframe Manufacturers

- Provide guidance to implement interoperable off-aircraft communication solutions.

4.2.3 Benefits for EFB Equipment and Application Suppliers

- Facilitate communication from EFB via available on-board links

5.0 Documents to be Produced and Date of Expected Result

ARINC Specification 8xx: *Aircraft Server, Communications, and Interface Standard* by no later than AEEC General Session 2020.

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above. This activity will be undertaken by the EFB Subcommittee. Regular teleconferences will be held between face to face meetings to maintain progress.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
ARINC Specification 8xx	6	2x1(w/EFBUF) 4x3 (dedicated EFB SC) 14 total days	Jul 2018	April 2020

Please note the number of meetings, the number of meeting days, and the frequency of web conferences to be supported by the IA Staff.

6.0 Comments

None.

6.1 Expiration Date for the APIM

May 2020

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 7

Attachment 7

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 18-001

New ARINC Project Paper 8xx: 5th Generation Cabin Network (5GCN)

1.1 Name of Originator and/or Organization

Cabin Systems Subcommittee (CSS)

Rolf Goedecke, Airbus

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Cabin System Subcommittee (CSS)

Dale Freeman, Delta Air Lines

2.2 Support for the activity (as verified)

Airlines: Delta Air Lines

Airframe Manufacturers: Airbus

Others: Panasonic, Thales, Rockwell, ZII, Amphenol, Molex, Souriau, Radiall, TEC, Miltope

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Delta Air Lines

Airframe Manufacturers: Airbus

Others: Panasonic, Thales, Rockwell, ZII, Amphenol, Molex, Souriau, Radiall, TEC, Miltope

2.4 Recommended Coordination with other groups

Network Infrastructure and Security (NIS), Fiber Optic Subcommittee (FOS)

3.0 Project Scope (why and when standard is needed)

3.1 Context

The scope of this project is to develop the next generation (5th) Cabin Distribution Network as an enhancement of the 4GCN standard. The standardization will combine multiple networks to a distribution network with single backbone. Advantages of the new fiber components (PP846) as well as the next generation cabin network bus (PP854) with a special focus on the topology with consideration of future bandwidth needs, redundancy, reliability and reconfigurability. The standard includes connectors, pin allocation, data bus and the protocol of the interfaces to allow interchangeability. An effort will be made to create a plug-and-play standard for in-seat and cabin peripherals.

3.2 Description

A standardized system answering a set of agreed customer functions and needs with a standardized network topology scalable to aircraft size and customer options with standardized interfaces and provisions in the aircraft to reduce the customization effort to a minimum.

3.3 Planned usage of the envisioned specification

New aircraft developments planned to use this specification yes ☒ no ☐

Airbus: all new

Boeing:

Modification/retrofit requirement yes ☐ no ☒

Specify: Airlines are retrofitting cabin systems into their existing fleets.

Needed for airframe manufacturer or airline project yes ☒ no ☐

Specify: driven by the need to provide common definitions for the airplane programs and retrofit programs

Mandate/regulatory requirement yes ☐ no ☒

Program and date: No mandate

Is the activity defining/changing an infrastructure standard? yes ☐ no ☒

Specify:

When is the ARINC Standard required? Per aircraft program

What is driving this date? Aircraft Development Schedules

Are 18 months (min) available for standardization work? yes ☒ no ☐

If NO, please specify solution: Not applicable

Are Patent(s) involved? yes ☐ no ☒

If YES please describe

3.4 Issues to be worked

- Functions
  - Provide high bandwidth to all passenger seats and connected cabin equipment
  - Network security considerations
- Architecture
  - Definition of single cabin backbone and system topology to minimize customization effort and to allow scalability
- Interface
  - Definition of standardized mechanical and electrical interfaces to the aircraft
  - Connectors and cabling and electrical interfaces for cabin devices

4.0 Benefits

4.1 Basic benefits

Operational enhancements yes ☒ no ☐

For equipment standards:

(a) Is this a hardware characteristic? yes ☒ no ☐

(b) Is this a software characteristic? yes ☐ no ☒

(c) Interchangeable interface definition? yes ☒ no ☐

(d) Interchangeable function definition? yes ☒ no ☐

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes ☒ no ☐

Product offered by more than one supplier yes ☒ no ☐

Identify:

4.2 Specific project benefits (Describe overall project benefits.)

The standardization of the 5GCN will increase the bandwidth needed for future and will take advantage of new high-speed network components.

4.2.1 Benefits for Airlines

The standardization of the 5GCN will ease customization and integration of such equipment in commercial aircrafts and allows fleet commonality between suppliers

4.2.2 Benefits for Airframe Manufacturers

It will provide the required bandwidth for future needs and makes use of new highspeed network components in order to simplify the cabin networks. It allows to standardize the provisions on the aircraft and reduces the lead time for the airlines as there is interchangeability of units, using the same mechanical and wiring provisions as well as data bus protocols.

4.2.3 Benefits for Avionics Equipment Suppliers

This standard supports the main goals to provide high bandwidth in conjunction with reliability and easy configurability by a simplified and harmonized topology and using the latest commercial standards to guarantee the quality of service. A single standard among different suppliers allows interchangeability and reduces development cost and therefore cost for the airlines.

5.0 Documents to be Produced and Date of Expected Result

- **New ARINC Project Paper 8xx:** *5GCN Seat Network*
- **Supplement 1 to ARINC Specification 846:** *Fiber Optic Ferrule, Mechanical Termini*
    - Develop new hybrid MT fiber and copper insert, using a new ARINC-defined rectangle MT fiber terminus.
- **Supplement 4 to ARINC Specification 664**: *Aircraft Data Network, Part 2, Ethernet Physical and Data Link Layer Specification*
    - Update Part 2 to include IEEE 802.3 bz Ethernet standard
- **Supplements to ARINC Specification 800**, Part 2 (Connectors), Part 3 (Cables), and Part 4 (Standard Test Methodology)
    - Updates for new revised connector and cable components and testing of the new links
- **Supplement 5 to ARINC Report 803:** *Fiber Optic Design Guidelines*
    - Updates for MT termini use cases
- **Supplement 6 to ARINC Report 805:** *Fiber Optic Test Procedures*

- o – Updates for MT termini use cases
- **Supplement 7 to ARINC Report 806:** *Fiber Optic Installation and Maintenance*
  - o – Updates for MT termini use cases
- **Supplement 5 to ARINC Report 807:** *Fiber Optic Training Requirements*
  - o – Updates for MT termini use cases
- **Supplement 1 to ARINC Specification 836A:** *Cabin Standard Enclosures*
  - o – Updates for new MT fiber connectors use in the Mini-MRP

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)*	Expected Start Date	Expected Completion Date
ARINC Project Paper 8XX	***12***	***36***	*5/18*	*5/21*
Supplement 4 to ARINC 664, Part 2			*5/18*	*5/21*
Supplements to ARINC 800, Parts 2,3,4			*5/18*	*5/21*
Supplement 1 to ARINC 803			*5/18*	*5/21*
Supplement 6 to ARINC 805			*5/18*	*5/21*
Supplement 7 to ARINC 806			*5/18*	*5/21*
Supplement 5 to ARINC 807			*5/18*	*5/21*
Supplement 1 to ARINC 836A			*5/18*	*5/21*

* Meeting days reflect CSS meetings responsible for multiple ARINC Standards. In addition to the in-person meetings identified above, web conferences will be called to support specific project goals.

* Updates to ARINC 803, 805, 806, 807, and 846 may require inputs prepared by the Fiber Optic Subcommittee.

6.0 Comments

6.1 Expiration Date for this APIM

October 2021

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 8

Attachment 8

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 18-002

LTE and Ligado Protection, and Enhanced VoIP, to be defined by the following:

- Supplement 8 to ARINC Characteristic 781
- Supplement 15 to ARINC Characteristic 741 Part 1
- Supplement 6 to ARINC Characteristic 761

1.1 Name of Originator and/or Organization

Alan Schuster-Bruce, Inmarsat

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

AGCS Subcommittee

Robert Holcomb, American Airlines

2.2 Support for the activity (as verified)

Airlines: American, KLM, TAP

Airframe Manufacturers: Airbus, Boeing, Bombardier

Suppliers: Cobham Satcom, Rockwell Collins, Honeywell, Thales

Others: Inmarsat

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: American

Airframe Manufacturers: Airbus, Boeing, Bombardier

Suppliers: Cobham Satcom, Rockwell Collins, Honeywell, Thales

Others: Inmarsat

2.4 Recommended Coordination with other groups

SAI Subcommittee

3.0 Project Scope

3.1 Description / Background

Resilience for new spectrum environment - The ITU in 2015 allocated the band up to 1518 MHz for mobile communications (e.g., LTE). Mobile/cellular operators are expected to deploy base stations in the next few years and, if near airports, these will cause interference to Inmarsat terminals (which receive in the band 1518-1559 MHz) causing them to be overloaded and hence inoperative. In the US this band will not be used as it is allocated for aeronautical telemetry. However, Ligado has a pending application with the FCC to deploy mobile communications in the band 1526-1536 MHz within the USA. Consequently, it is necessary to develop new equipment (specifically new Diplexer Low Noise Amplifiers - DLNAs) and aircraft provisions (if needed) suitable for retrofit and forward fit which have sufficient resiliency to such mobile communication transmissions. The DLNA to support Inmarsat SwiftBroadband needs to be

switchable as the Ligado signal is in the Inmarsat band.

Note that ARINC 781 compact satcom systems currently under development have Ligado and LTE resilience incorporated.

Enhanced VOIP - ARINC Characteristic 781-7 presently includes a security overlay (VPN) based on IPSEC and PKI to support ACARS services. Due to security concerns raised by Airbus, it is proposed to extend this to the SwiftBroadband Safety VOIP service in Supplement 8. The new service will be called enhanced VOIP.

Scope of activity

It is proposed to:

1. Include in ARINC Characteristic 781, potentially four (4) DLNA specifications with functions shown in the table below. The DLNAs may be used for forward fit and retrofit for ARINC 741, ARINC 761 and ARINC 781 satcom systems. For the Type 4 DLNA specification, wiring changes and a control functions (within the satcom system) are expected to be needed, as the DLNA has switchable filters that require switching in flight.

   The choice of DLNA for a specific aircraft will depend on the type of Inmarsat service used, whether retrofit or forward fit, compatibility with existing form factor and wiring, installed cost, time to market, and where the aircraft will operate. To date, a single cost-effective solution for all cases has not been found, although the AGCS Subcommittee will try to identify such a solution.

Type	LTE Resilient	Ligado Resilient	Supports Classic Aero	Supports Swift Broadband	Drop in replacement to existing DLNA
1	X		x		x
2	X		x	x	x
3	X	x	x		x
4	X	x	x	x	

   Notes:

   A reference to ARINC 781 from ARINC 741 and from ARINC 761 will be made.

   The AGCS subcommittee will propose names for these DLNAs to replace the working names in the table.

2. Include in ARINC 781 the addition of VOIP to the existing VPN.

3. Some other maintenance changes will be made to ARINC 781 including:
   - Alignment to ARINC 771 including security objectives, dual satcom, Ethernet, and CMU interface
   - Other minor issues as they arise

3.2 Planned usage of the envisioned specification

Note: New airplane programs must be confirmed by manufacturer prior to completing this section.

Use the following symbol to check yes or no below. ☒

New aircraft developments planned to use this specification yes ☒ no ❑

- Airbus: All production aircraft
- Boeing: All production aircraft
- Other: Bombardier production aircraft

Modification/retrofit requirement yes ☒ no ❑

- Specify: Any aircraft that require LTE/Ligado resilience

Needed for airframe manufacturer or airline project yes ❑ no ❑

- Specify: (aircraft & date)

Mandate/regulatory requirement yes ❑ no ☒

Is the activity defining/changing an infrastructure standard? yes ❑ no ☒

When is the ARINC Standard required?

- March 2019

What is driving this date?

New DLNA - deployment of LTE in band adjacent to Inmarsat and possible deployment of Ligado

Enhanced VOIP - Development of Airbus Lightweight Cockpit Satcom programme

Are 18 months (min) available for standardization work? yes ❑ no ☒

- If NO please specify solution: The AGCS Subcommittee believes one year is sufficient time

Are Patent(s) involved? yes ❑ no ☒

- If YES please describe, identify patent holder: _____

3.3 Issues to be worked

New DLNA - RF filtering, control of filter including potential wiring changes, what happens if Ligado's license is not approved, compatibility with existing SDUs without software changes, identifying a single solution, defining the names for the DLNAs.

Enhanced VOIP - none known

4.0 Benefits

4.1 Basic benefits

Operational enhancements yes ☒ no ❑

For equipment standards:

a. Is this a hardware characteristic? yes ☒ no ❑

b. Is this a software characteristic? yes ☒ no ❑

c. Interchangeable interface definition? yes ❑ no ☒

d. Interchangeable function definition? yes ☒ no ❑

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes ❑ no ☒

Specify: _____

Product offered by more than one supplier yes ❑ no ❑

Identify: Service: Inmarsat only

SDU: Cobham Satcom, L3T, Honeywell, Rockwell Collins, Thales

4.2 Specific Project Benefits

4.2.1 Benefits for Airlines

Provide a state of the art security overlay for VOIP/SBB.

Provide continued operation of Inmarsat services at airports when LTE is deployed, and if Ligado is deployed.

4.2.2 Benefits for Airframe Manufacturers

Provide what airlines need/want.

4.2.3 Benefits for Avionics Equipment Suppliers

More/continued sales, and provides more functionality from the satcom system.

5.0 Documents to be Produced and Date of Expected Result

ARINC 781 - Supplement 8

ARINC 741 Part 1 - Supplement 15

ARINC 761 - Supplement 6

5.1 Meetings and Expected Document Completion

Product/Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Supplement 8 to ARINC Characteristic 781	*3*	*9**	*April 2018*	*March 2019*
Supplement 15 to ARINC Characteristic 741 Part 1			*April 2018*	*March 2019*
Supplement 6 to ARINC Characteristic 761			*April 2018*	*March 2019*

* It is expected that this activity will be carried out during 3 AGCS Subcommittee meetings shown above. Web conferencing, 1 or 2 per month where appropriate.

6.0 Comments

None

6.1 Expiration Date for this APIM

Sept 2019

Submit completed form to the AEEC Executive Secretary.

Attachment 9

Attachment 9

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 18-003

ARINC Project Paper 8xx: Next Generation Radio Systems Architecture Framework

1.1 Name of Originator and/or Organization

Airbus

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Group: SAI Subcommittee

Chairmen: Rich Stillwell, United and Reinhard Andreae, Lufthansa

2.2 Support for the activity (as verified)

Airlines: American, Delta, Southwest, UPS, United

Airframe Manufacturers: Airbus, Boeing, Embraer

Suppliers: ACSS, Honeywell, Rockwell Collins, Thales

Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines:

Airframe Manufacturers: Airbus, Boeing

Suppliers:

Others:

2.4 Recommended Coordination with Other Groups

AGCS, DLUF, DLK, IPS,

3.0 Project Scope (why and when standard is needed)

3.1 Description

Enabled by the introduction of new technological advances in electronic components and capabilities, new concepts of distributed architectures are emerging for the CNS (Communication, Navigation, Surveillance) radio systems, which show very promising benefits in terms of costs, size, weight, and power consumption.

The baseline underlying principle of such distributed radio architectures is to relocate parts of the radio processing on a hardware placed at close proximity of the antenna, while residual functions and processing of the radio can be done with software running on less specific computing platforms installed in the avionics bay. Such distributed radio architectures allow notably:

- Simplification (and SWAP/cost savings) to RF signal processing parts, by avoiding signal attenuations/interferences over long coaxial wires
- Simplification (and Weight/costs savings) on the wiring, by replacement of RF coaxial cables with thinner, lighter, and more easily installed digital links
- Increased flexibility for evolution of the radio and its interfaces, and for adaptation to specificities of the targeted aircraft platform via software upgrade (e.g., Short range vs Long range mission according to regional environment)

- Paving the way to further optimization on the architecture, e.g., communalization of components of these architecture across multiple radio systems, simplification of the radio physical interfaces, or of the packaging of hardware parts.

Given the promising benefits of such radio architectures, initiatives from suppliers to propose distributed radio products should be encouraged. However, a risk arises that disparate and exclusive proposals from different suppliers may lead to a variety of supplier specific solutions, which would be with detrimental effects on:

- Interoperability and Interchangeability / mixability of product lines;
- Consistency and optimization of the overall A/C systems architecture with regards to the intended benefits;
- Fair and sustained competition between suppliers.
- Qualification /Certification workload and cost
- Supplier market size, and resulting product costs
- Trust of the final customers in these new products

It is proposed to develop a comprehensive framework setting the commonly agreed preferred approaches for future aircraft radio systems architectures, and providing recommendations, direction, required characteristics, transition scenarios and roadmap for possible new standards on constituents of these architectures.

That framework would come as an “overarching standard,” ahead of future individual CNS radio equipment standards to establish an industry consensus on the way forward to these future architectures.

The output of the subcommittee will be an ARINC Report.

3.2 Planned usage of the envisioned specification

Note: New airplane programs must be confirmed by manufacturer prior to completing this section.

New aircraft developments planned to use this specification

Airbus: (TBD) yes ☒ no ☐

Boeing: (TBD) yes ☒ no ☐

Other: (manufacturer, aircraft & date)

Modification/retrofit requirement yes ☐ no ☒

Specify: (aircraft & date)

Needed for airframe manufacturer or airline project yes ☒ no ☐

Specify: (aircraft & date)

Mandate/regulatory requirement yes ☐ no ☒

Program and date: (program & date)

Is the activity defining/changing an infrastructure standard? yes ☐ no ☒

Specify:

When is the ARINC standard required? __2021____

What is driving this date? _____

Are 18 months (min) available for standardization work? yes ☒ no ☐

If NO please specify solution: _____

Are Patent(s) involved? yes ☐ no ☒

If YES please describe, identify patent holder: _____

3.3 Issues to be worked

Issues to be worked include an assessment addressing the following:

- A typology/classification of radio architectures, including new distributed radio architecture options
- Identification of the best architecture option(s) for each CNS radio in the future
- Possible future transverse combination/integration of CNS radio components
- Constraints for RF Front Ends installation and identification of Fit/Forms solutions
- Requirements on the digital interfaces to RF Front Ends and recommendations for the development of a standard
- Requirements on future avionics interfaces for the radio systems (data/audio) and recommendations for the development of a standard
- Characterization of radio computing platforms and recommendations for the development of standards
- Identification of potential opportunities for the factorization/rationalization of common services for the radios
- Data Security requirements, and approaches for isolation of the aircraft systems from attacks through RF interfaces
- Safety considerations on the architectures
- Certification considerations
- Transition approaches for the deployment of new products, including on current aircraft programs

Based on this assessment, the work should be completed by the definition of a plan to develop missing standards.

4.0 Benefits

4.1 Basic benefits

Operational enhancements yes ☒ no ☐

For equipment standards:

(a) Is this a hardware characteristic? yes ☒ no ☐

(b) Is this a software characteristic? yes ☒ no ☐

(c) Interchangeable interface definition? yes ☒ no ☐

(d) Interchangeable function definition? yes ☒ no ☐

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes☐ no ☒

Specify: _____

Product offered by more than one supplier yes ☒ no ☐

Identify: (company name)

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

Weight and power consumption savings inducing lower fuel consumption:

The currently used long RF co-axial cables are relatively heavier than digital cables. The weight of the additional brackets needed to guide these RF cables over separate routes (to avoid electromagnetic interferences) is also not negligible. Hence, replacement of RF coaxial cables by thinner, lighter, and bundled digital cables or optical fibers can save tangible weight.

Replacement of the lossy RF coaxial cables by digital interface and location of the RF Front End in close proximity to the antenna, remove the need to compensate the cable loss and noise, and can allow using of smaller and lighter hardware, consuming less power.

Reduction of Interference Issues

Carrying analog signals over long RF coaxial cable present EMI radiation and susceptibility issues, notably crosstalk interferences, which are removed with the use of digital cables.

Flexibility for evolutions, and options management

Less constrained by the inflexibility of hardwired circuitry and wiring specificities, distributed radio architectures may reduce the work required to incorporate evolutions, and additions & removals to the Aircraft radio systems.

Interoperable with current Ground and Space infrastructures (No change required)

4.2.2 Benefits for Airframe Manufacturers

Faster aircraft production:

The conventional radio systems installation costs are driven by mechanical RF structures (high-quality connectors, waveguide, coax and brackets) which are numerous and globally heavy and expensive because of the relatively large number of discrete parts and the high labor content of assembly and installation. Many RF assemblies are virtually hand crafted on the production line.

The use of digital bus technology, on the other hand, reduces or eliminates most such manufacturing steps. Digital buses can be bundled together, which has the potential to reduce installation constraints. They can be auto-tested. A single bus or optical fiber may have the potential to replace number of RF cables. And digital technology is also much more amenable economies of scale in manufacturing.

Weight and power consumption savings inducing lower fuel consumption:

Similar to airline benefits

Reduction of Interference Issues

Similar to airline benefits

Flexibility for evolutions, and options management

Similar to airline benefits

4.2.3 Benefits for Avionics Equipment Suppliers

Lower Product Recurring Cost

With simpler physical interfaces, simpler packaging, a reduced number of hardware specific parts, and software reusability, future radio system architectures are destined to make radio products easier and cheaper to manufacture and maintain.

Better reusability across different aircraft platform

Distributed parts of the radio can be made less dependent on the target aircraft architecture and interfaces, and evolutions.

5.0 Documents to be Produced and Date of Expected Result

ARINC Project Paper 8xx: Next Generation Radio Systems Architecture Framework

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs*	Mtg-Days* (Total)	Expected Start Date	Expected Completion Date
ARINC Project Paper 8xx: *Next Generation Radio Systems Architecture Framework*	*6*	*18*	*June 2018*	*Dec 2020*

* Shows SAI Subcommittee in-person meetings. Web conferences are expected to be held on a regular basis.

6.0 Comments

None.

6.1 Expiration Date for the APIM

Dec 2021

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 10

Attachment 10

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 18-004

Supplement 5 to **ARINC Report 665**: *Loadable Software Standards*

1.1 Name of Originator and/or Organization

Ted Patmore, Delta Air Lines

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

ARINC Software Distribution and Loading (SDL) Subcommittee

Chairmen:

- Rod Gates, American Airlines
- Ted Patmore, Delta Air Lines

2.2 Support for the activity (as verified)

Airlines: Delta Air Lines, American Airlines

Airframe Manufacturers: Boeing

Suppliers: Honeywell, Rockwell Collins, TechSAT

Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Delta Air Lines

Airframe Manufacturers: Boeing

Suppliers: Honeywell, Rockwell Collins, TechSAT

Others:

2.4 Recommended Coordination with other groups

TBD

3.0 Project Scope (why and when standard is needed)

Supplement 4 to ARINC Report 665 was published in July 2016. The standard was updated to include existing data that was contained in Technical Application Bulletins (TAB), errata, industry input, and coordination to align with other ARINC Standards and external documents.

There have been several other documents developed or modified within AEEC Standards that affect the content of ARINC Report 665.

3.1 Description

ARINC Report 665: *Loadable Software Standards*

This document defines the aircraft industry's standards for Loadable Software Parts (LSP) and Media Set Parts (MSP). It describes the common principles and rules to be applied to any part of a data load system to ensure compatibility and interoperability.

Included are standard processes for part numbering, content, labeling, and formatting of an LSP, and a Media Set containing LSPs.

ARINC Report 665 publication history:

Initial Publication – Published: December 22, 1999

- ARINC Report 615A, *Software Data Loader Using Ethernet Interfaces*, was developed in two parts:
  - Part 1 – Physical Standards and Protocols
  - Part 2 – Loadable Software Standards.

Supplement 1 - Published: January 12, 2001.

- The former Part 1 of ARINC Report 615A is published as Supplement 1 of ARINC Report 615A, *Software Data Loader Using Ethernet Interfaces*.
- The former Part 2 is published as Supplement 1 of ARINC Report 665, *Loadable Software Standards*.

Supplement 2 - Published: August 30, 2002

- Addition of spare 16 bit field for alignment of pointers.
- Moved List of Batch File Content and Organization to Section 3.0
- Addition of .LUB file name extension

Supplement 3 - Published: August 12, 2005

- Several changes regarding check value (CRC)
- New sections added.

Supplement 4 - Published: July 14, 2016

- Part number conventions
- Nomenclature considerations
- Security and integrity checking
- Manufacturer's Code Request processes

Supplement 5 – This proposed APIM

- Proposed work described in Section 3.3 of this APIM.

3.2 Planned usage of the envisioned specification

Note: New airplane programs must be confirmed by manufacturer prior to completing this section.

New aircraft developments planned to use this specification yes ☐ no ☒

Airbus: (aircraft & date)

Boeing: (aircraft & date)

Other: (manufacturer, aircraft & date)

Modification/retrofit requirement yes ☐ no ☒

Specify: (aircraft & date)

Needed for airframe manufacturer or airline project yes ☐ no ☒

Specify: (aircraft & date)

Mandate/regulatory requirement yes ☐ no ☒

Program and date: (program & date)

Is the activity defining/changing an infrastructure standard? yes ☒ no ☐

Specify (e.g., ARINC 429)

When is the ARINC standard required? _____(month/year)_____

What is driving this date? _____(state reason)_____

Are 18 months (min) available for standardization work? yes ☒ no ☐

If NO please specify solution: _____

Are Patent(s) involved? yes ☐ no ☒

If YES please describe, identify patent holder: _____

3.3 Issues to be worked

Intent of work covered by this APIM

The SDL Subcommittee will not modify the software part format version (8002/3 in code) in ARINC 665. The resulting supplement will remain technically accurate, relevant, and backwards compatible with previous supplements and their functionality.

The work to be accomplished includes:

Solve Logical MSPs and LSP issues: ARINC 665 should be consistent with Logical MSP definitions found in ARINC Specification 641.

ARINC Specification 641: *Logical Software Part Packaging for Transport* was developed by the SDL working group and published July 31, 2015. It provides a method for packaging aircraft software parts for distribution using contemporary media or by electronic distribution. ARINC 665 Appendix F needs modification to be consistent with ARINC 641.

Reference ARINC Specification 838 from ARINC Report 665.

ARINC Specification 838: *Loadable Software Part Definition Format* should be referenced from ARINC Report 665 as a consistent way forward to produced XML defined software parts. This is a good time to reconcile any part formats that may have slight content inconsistencies between standards.

Synchronize ARINC Report 665 with ARINC Project Paper 645: *Common Terms and Functions for Software Distribution and Loading*

ARINC 645 purpose is to contain information that is common across aircraft software management related documents. Included items are:

- Which ARINC data loading standard to use in specific situations
- The use of and how integrity checks should be applied
- Common terminology in airborne software management
- Compile and present all applicable CRC material
- Guidance for Manufacturer’s Code requests and usage

4.0 Benefits

4.1 Basic benefits

Operational enhancements yes ☒ no ☐

For equipment standards:

(a) Is this a hardware characteristic? yes ☐ no ☒

(b) Is this a software characteristic? yes ☒ no ☐

(c) Interchangeable interface definition? yes ☒ no ☐

(d) Interchangeable function definition? yes ☒ no ☐

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes ☒ no ☐

Specify: Allows for interoperable software parts

Product offered by more than one supplier yes ☒ no ☐

Identify: All software producing organizations

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

Having a standard format for software part greatly reduces the need for airlines to own and maintain multiple ground equipment types for managing software across multiple fleets and equipment types. Equipment diversity and cost is reduced by accepting one standard format.

4.2.2 Benefits for Airframe Manufacturers

The airframe manufacturers have one standard format to specify for all software part distributions. Software parts will be in standard format used by all equipment suppliers.

4.2.3 Benefits for Avionics Equipment Suppliers

Component manufacturers Equipment design is simplified by accepting one standard format. They are able to provide to provide products that are consistent with one industry standard.

5.0 Documents to be Produced and Date of Expected Result

Supplement 5 to ARINC Report 665 will be produced.

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs*	Mtg-Days* (Total)	Expected Start Date	Expected Completion Date
Supplement 5 to ARINC Report 665, *Loadable Software Standards*	*5*	*5*	*Jun 2018*	*Oct 2019*

* Reflects in-person meetings

6.0 Comments

The SDL Subcommittee has two other on-going projects. This APIM, if approved, will be worked in conjunction at each F2F meeting. Web conferences will also be utilized for each project.

6.1 Expiration Date for the APIM

April 2020

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 11

Attachment 11

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 18-005

Supplement 1 to **ARINC Specification 843:** *Aircraft Software Common Configuration Reporting*

1.1 Name of Originator and/or Organization

Todd Gould, Boeing

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

AEEC Software Distribution and Loading (SDL) Subcommittee

Ted Patmore, Delta Air Lines

Rod Gates, American Airlines

2.2 Support for the activity (as verified)

Airlines: Delta Air Lines, American Airlines, Lufthansa, KLM

Airframe Manufacturers: Boeing

Suppliers: Honeywell, Teledyne Controls, TechSAT

Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Delta Air Lines, American Airlines, Lufthansa, KLM

Airframe Manufacturers: Boeing

Suppliers: Honeywell, Teledyne Controls, TechSAT

Others:

2.4 Recommended Coordination with other groups

SAI, NIS

3.0 Project Scope (why and when standard is needed)

Boeing's work on the B777X has highlighted the need for Supplement 1 to ARINC Specification 843.

This standard is used to provide aircraft OEMs, Regulatory Agencies, and Airline maintenance and engineering a basic format standard for automated configuration report creation and interpretation between different aircraft types and manufacturers.

This document defines a standard format needed to facilitate consistency among all configuration reports to avoid confusion by people who are reading the report, and makes automation of configuration reports possible.

3.1 Description

Aircraft configuration management has become increasingly difficult to manage since the introduction of on-board loadable software and central maintenance computers across various aircraft types. Electronic files listing the location, name,

and part number are created and displayed on aircraft for configuration control. Information in these files such as Location nomenclature, Part Name and Part Number format can vary not only from aircraft types, but from displays, printers, and downloaded files from the same aircraft. In some cases, this information does not exactly match aircraft documentation, increasing the potential for human factor mistakes and making automated configuration control more complex.

A standard format is needed to facilitate consistency among all configuration reports. The part name, number, and location should be expressed in a consistent manner that will allow for unambiguous interpretations by persons and machines. This avoids confusion by people who are reading the report and makes automation of configuration reports possible.

This standard format is independent of the method used for configuration data collection. The format of the configuration report will be the same when data is collected manually as when collected automatically (i.e., by electronic means). Information from all sources will be stored using pre-defined field names and sizes (i.e., Part number, SLID, FIN, etc.).

As configuration reports are used to confirm what parts are installed and when, they may be used to demonstrate the modification status of ADs for regulatory use, increasing the justification for producing a standard for configuration information.

AMMs may not contain examples of how configuration information is displayed on the aircraft they are working, resulting in maintenance personnel interpretations.

Software intensive aircraft drive the need for strict software control and configuration management. This proposed project would automate the process.

3.2 Planned usage of the envisioned specification

Note: New airplane programs must be confirmed by manufacturer prior to completing this section.

New aircraft developments planned to use this specification — yes ☒ no ☐

- Airbus: Unknown
- Boeing: B777X, ASAP
- Other: Unknown

Modification/retrofit requirement — yes ☒ no ☐

- Specify: As necessary

Needed for airframe manufacturer or airline project — yes ☐ no ☒

- Specify: (aircraft & date)

Mandate/regulatory requirement — yes ☐ no ☒

- Program and date: (program & date)

Is the activity defining/changing an infrastructure standard? — yes ☐ no ☒

- Specify: (e.g., ARINC 429)

When is the ARINC standard required? October 2018

What is driving this date? [TBD]

Are 18 months (min) available for standardization work? yes ☒ no ☐

If NO please specify solution: _____

Are Patent(s) involved? yes ☐ no ☒

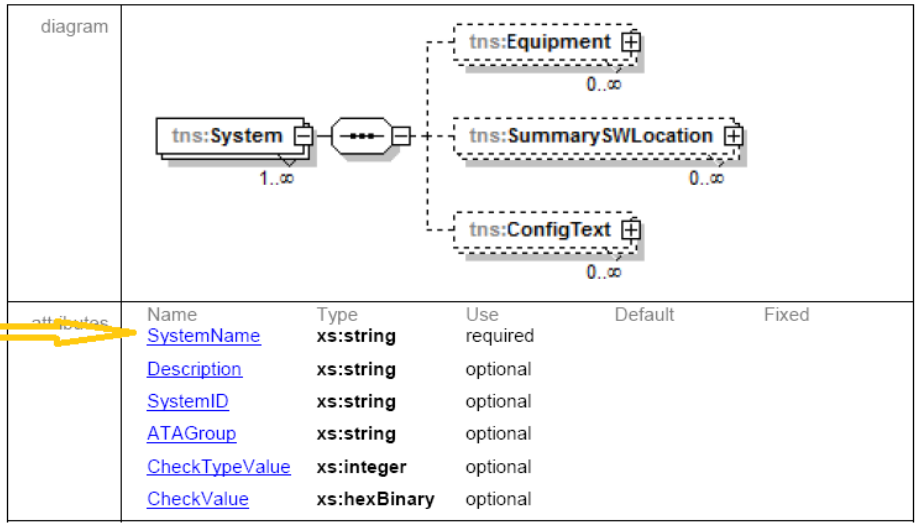
If YES please describe, identify patent holder: _____

3.3 Issues to be worked

ARINC 843 has an error, which should be corrected to prevent the reader/implementer using incorrect attribute names.

The attribute “SystemName” as part of element System is represented as SystemName in the A843 XML document and with the example provided with the A843 XML document represent “Name” instead of SystemName.

The sample report provided by Boeing also represents “Name”, CMCF is programmed to represent as “Name”.



Todd Gould noticed that the .XSD schema and some of the document wording uses Name and SystemName for the same attribute.

We should change all SystemName document wording to Name to match the schema next revision and publish errata soon.

This should preclude us from having to roll the .XSD schema file.

The SDL should change the diagram and Section 4.3.1 as follows:

Section 4.3.1, *Element System Attribute Rules*

attribute ~~System~~Name

The Name attribute is intended to list the name of the system being reported (e.g., Flight Controls System).

4.0 Benefits

4.1 Basic benefits

Operational enhancements yes ☐ no ☒

For equipment standards:

(a) Is this a hardware characteristic? yes ☐ no ☒

(b) Is this a software characteristic? yes ☒ no ☐

(c) Interchangeable interface definition? yes ☒ no ☐

(d) Interchangeable function definition? yes ☒ no ☐

If not fully interchangeable, please explain: _____

Is this a software interface and protocol standard? yes ☒ no ☐

Specify: _____

Product offered by more than one supplier yes ☒ no ☐

Identify: (company name)

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

Improved clarity of aircraft configuration for maintenance and regulatory agencies.

Less time used by maintenance and engineering interpreting and configuration information.

Improved Automated Part management (software and hardware) control and modification.

4.2.2 Benefits for Airframe Manufacturers

Standard guidance for the information in configuration reports, as proposed in this document, will help reduce cost of design and implementation. By ensuring a consistent approach, design work need not be repeated, and operators benefit from uniform processes.

4.2.3 Benefits for Avionics Equipment Suppliers

Supply an automated aircraft configuration product effective for an airlines' fleet that uses electronic configuration reporting.

5.0 Documents to be Produced and Date of Expected Result

Supplement 1 to ARINC Specification 843 in 2019.

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce the documents described above.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Supplement 1 to ARINC 843	*3*	*9**	*April 2018*	*April 2019*

* This project worked in conjunction with other SDL projects (i.e., three 3-day meetings per year total, etc.).

6.0 Comments

The Software Data Loader Subcommittee has other projects in work, specifically:

APIM 16-002, **ARINC Project Paper 645:** *Common Standard for Software Data Distribution and Loading*

APIM 16-015, **ARINC Project Paper 851:** *Software Ground Systems for e-Enabled Aircraft*

6.1 Expiration Date for the APIM

April 2019

Completed forms should be submitted to the AEEC Executive Secretary.