AEEC

Together "We Set the Standard."

To	Aviation Industry	**Date**	October 25, 2017
From	P. J. Prisaznuk AEEC Executive Secretary pjp@sae-itc.org tel +1 240-334-2579	**Reference**	17-140/AXX-210 lth

Subject **AEEC Work Program for 2017-2018**
AEEC Mid-Term Session
October 19-20, 2017 – Brussels, Belgium

Summary Adding to the ARINC Standards in development, the AEEC Executive Committee approved six project proposals at the AEEC Mid-Term Session in Brussels:

15-004A	Internet Protocol Suite (IPS) for Aeronautical Safety Services – Technical Requirements – New ARINC Project Paper 858
16-005A	Cabin Systems – ARINC Specification 628 Part 0, Overview, Supplement 4 and Part 1, Peripherals, Supplement 8
17-010	ARINC 429 – Plan for Supplement 19
17-011	Cabin and Cargo Video Surveillance System – ARINC Specification 628 Part 1, Peripherals, Supplement 8
17-012	Third Generation Cabin Network (3GCN) – ARINC Specification 808, Supplement 3 and ARINC Specification 809, Supplement 4
17-013	Cabin IFE Modems – ARINC Specification 628 Part 1, Peripherals, Supplement 8

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).

Summary The purpose of this letter is twofold:

1. Actions of the Airlines Electronic Engineering Committee (AEEC) are hereby announced

2. ARINC Industry Activities invites its Members, Corporate Sponsors, and other interested parties to participate in ARINC Standards development activities.

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

cc AEEC Executive Committee, CSS, DLK, IPS, SAI

Attachment 1

Attachment 1

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 15-004A

ARINC Project Paper 858: *Internet Protocol Suite (IPS) for Aeronautical Safety Services - Technical Requirements (working title)*

1.1 Name of Originator and/or Organization

Boeing

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Group: Internet Protocol Suite (IPS) for Aeronautical Safety Services Subcommittee

Co-Chairs: Luc Emberger (Airbus) and Greg Saccone (Boeing)

2.2 Support for the activity (TBC)

Airlines: AAL, DLH, HAL, SWA, UAL, UPS, USAF

Airframe Manufacturers: Boeing, Airbus

Suppliers: Airtel ATN, GE Aviation, Honeywell, Rockwell Collins, Thales, CGI

Others: ARINC (RC-IMS), BCI, EUROCONTROL, FAA, SITA, Inmarsat, Iridium, Panasonic

2.3 Commitment for Drafting and Meeting Participation (TBC)

Airlines: AAL, HAL, USAF

Airframe Manufacturers: Boeing, Airbus

Suppliers: Airtel ATN, GE Aviation, Honeywell, Rockwell Collins, Thales, CGI

Others: ARINC (RC-IMS), BCI, EUROCONTROL, FAA, SITA, Inmarsat, Iridium, Panasonic

2.4 Recommended Coordination with other groups

DLUF, DLK, NIS, SAI

3.0 Project Scope

3.1 Description

The Existing ACARS network and Aeronautical Telecommunication Network (ATN) infrastructure for aeronautical safety services is aviation-unique. Modern, off-the-shelf, efficient, and robust network infrastructure common to both air traffic services (ATS) and aeronautical operational communications (AOC) safety service applications is needed.

Note: The ITU Radio Regulations define “safety service” as any “radiocommunication service

used… for the safeguarding of human life and property" and ICAO Annex 10 refines that definition to a "service reserved for communications relating to safety and regularity of flights", specifically ATS and AOC "safety communications" as defined in ICAO Doc 9718.

New network infrastructure for safety services based on the modern Internet Protocol Suite (IPS) will meet this need. Accordingly, it is proposed that a new AEEC subcommittee prepare a detailed technical definition of IPS for aeronautical safety services in a new ARINC Standard. This subcommittee will base the specification on the ICAO Doc 9896 IPS definition and on prevalent commercial IP network technology (e.g., IETF RFC 2460 for IPv6) with the modifications necessary to support aeronautical safety services. It is anticipated that IPS will use multiple line-of-sight and beyond-line-of-sight subnetworks that operate in 'protected' spectrum allocated by ITU and ICAO for safety services, including Inmarsat SwiftBroadband, Iridium Certus, AeroMACS, future Satcom and LDACS systems, and VDL Mode 2. It is expected that IPS will support ACARS ATS (e.g., FANS) and AOC (e.g., ARINC 702A flight plans) as well as **B2 and future applications. This activity represents a planned continuation of IPS Subcommittee work.**

The IPS Subcommittee is preparing documents in two steps. Step 1 was a roadmap activity, which defines the perimeter which needs to be standardized for IPS (air-to-ground and end-to-end) as well as the timeframes within respective standardization development organizations (SDOs) such as ICAO, RTCA, EUROCAE and AEEC. The output of Step 1 is ARINC Project Paper 658 (to be completed in October 2017).

Step 2 will be an ARINC Standard containing the specification of IPS functions, implementation options, and constraints as well as higher level details regarding the accommodation of different applications.

The IPS subcommittee will also maintain specific sections of ARINC 658 (e.g., identifying gaps and which SDOs are working which areas) and provide coordination across IPS standardization activities as appropriate.

3.2 Planned usage of the envisioned specification

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

Specify: TBD

Modification/retrofit requirement yes ☒ no ☐

Specify: If airlines want to take advantage of IPS for aeronautical safety services, then they must retrofit the capability via CMU (or equivalent) avionics

Needed for airframe manufacturer or airline project yes ☒ no ☐

Specify: Boeing TBD airplane programs

Mandate/regulatory requirement yes ☐ no ☒

Program and date: No mandate

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

Specify: IPS is envisioned to eventually replace ACARS and ATN in the

long term

When is the ARINC Standard required? 2019

What is driving this date? Pull from airlines due to their needs/wants to prepare for the future with modern, efficient, and robust data communications network infrastructure for safety services that leverages the increasing availability of IP links to their airplanes (e.g., Inmarsat SwiftBroadband, Iridium Certus, AeroMACS). Additionally, the normal long lead time for development of aviation specifications means that key areas need to start being investigated and developed now to meet longer term targets in the mid-2020s.

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

Issues to be worked in Step **2 include the following:**

- **Organize and execute IPS standards development efforts to address the work scope allocated to the IPS Subcommittee, initially outlined as described in Section 5.4.1.1 of ARINC 658.**
  - **Prepare ARINC Project Paper 858: Internet Protocol Suite (IPS) for Aeronautical Safety Services - Technical Requirements (working title) - (pending approval of the AEEC Executive Committee).**
- **Maintain the IPS standardization roadmap (including updates to the gap analysis and standardization activity timing), contained in Section 5 of ARINC 658. If necessary, prepare Supplement 1 to ARINC 658.**
- **Serve as the coordination focal for all AEEC IPS-related activities, including:**
  - **Coordinate with industry stakeholders and other AEEC subcommittees to ensure that the timing and scope of IPS-related project proposals consider the "need-by" dates of specific industry programs as well as dependencies on other AEEC Subcommittees and/or other standards development organizations.**
  - **Address questions from other AEEC Subcommittees regarding interpretations of ARINC 658.**
  - **Monitor AEEC IPS-related developments and standardization work.**
- **Coordinate with other IPS standardization development organizations, including:**
  - **Engage AEEC IPS industry participants, particularly those who support multiple SDOs, to develop and present working papers to other SDOs regarding the status of AEEC IPS efforts.**

- **Leverage the IPS standardization roadmap as a communication tool for inter-organization coordination, particularly where there may be dependencies.**
- **Based on updates to the gap analysis, provide recommendations for potential additional work to be considered by the other SDOs.**

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: Not applicable

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

Specify: IPS will provide a third set of network protocols (in addition to ACARS and ATN)

Product offered by more than one supplier yes ☒ no ☐

Identify: TBD

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

Airline benefits are expected to accrue in the form of greater data communications performance compared to ACARS and ATN. IPS will be designed to support both ATS and AOC applications, provide backward compatibility with traditional ACARS ATS (e.g., FANS) and AOC (e.g., ARINC 702A flight plans) applications, and use both line-of-sight and beyond-line-of-sight subnetworks, all of which will further increase its effectiveness and applicability. IPS will support a wide range of future applications and enable a transition to high-speed links for safety services.

4.2.2 Benefits for Airframe Manufacturers

It is expected that airframe manufacturers' benefits will accrue in the form of moving towards future datalink technologies providing more bandwidth and capabilities. IPS protocols (IP, TCP, and UDP) have been exhaustively tested in the commercial domain and are widely available for adaptation for aeronautical use.

4.2.3 Benefits for Avionics Equipment Suppliers

Avionics equipment supplier benefits will accrue in the form of moving towards future datalink technologies providing more bandwidth and capabilities. IPS protocols (IP, TCP, and UDP) have been exhaustively tested in the commercial domain and are widely available for adaptation for aeronautical use.

5.0 Documents to be Produced and Date of Expected Result

ARINC Project Paper 658: Internet Protocol Suite (IPS) for Aeronautical Safety Services - Roadmap Document (mature document, October 2017)

ARINC Project Paper 858: Internet Protocol Suite (IPS) for Aeronautical Safety Services - Technical Requirements (working title, due 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
Step 1: ARINC Report Standardization Roadmap for IPS, (Develop plan and work program, identify deliverables pertaining to IPS)	5	**15**	September 2015	**October** 2017
Step 2: ARINC Project Paper **858: Internet Protocol Suite (IPS) for Aeronautical Safety Services - Technical Requirements (working title)**	**6**	**18**	**October 2017**	**December** 2019

6.0 Comments

6.1 Authorization for Step 2

This APIM authorizes the activity proposed for Step 2.

6.2 Expiration Date for the APIM

June 2020

Attachment 2

Attachment 2

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project — APIM 16-005A

Define Cabin System Interfaces as follows:

- HD Landscape Camera
- ~~USB 3.1 Power Outlets~~ **(completed)**
- Update Network System Components
- 4K Ultra High Definition Video Standards
- **Update Part 0 Overview of ARINC Cabin Standards**

1.1 Name of Originator and/or Organization

Cabin Systems Subcommittee (CSS)
Delta Air Lines, Chairman

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
Airframe Manufacturers: Airbus, Boeing
Suppliers: KID, VT Miltope, LH-Technik, Thales, Panasonic, Rockwell-Collins, Lumexis, Zodiac ZII, Zodiac Seats France, Astronics, Amphenol, TE Connectivity, Esterline Souriau, ITT Cannon, W. L. Gore, Molex, Latecoere
Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Delta
Airframe Manufacturers: Airbus, Boeing
Suppliers: KID, VT Miltope, LH-Technik, Thales, Panasonic, Rockwell-Collins, Lumexis, Zodiac ZII, Zodiac Seats France, Astronics, Amphenol, TE Connectivity, Esterline Souriau, ITT Cannon, W. L. Gore, Molex, Latecoere
Others:

2.4 Recommended Coordination with other groups

N/A

3.0 Project Scope (why and when standard is needed)

3.1 Description

New and retrofit aircraft will use the documents developed under this standardization program. The documents will define cost effective and valuable network infrastructures for interface standards between inter-cabin and cabin-to-aircraft equipment and communications standards.

The objective is to help the airlines cope with the rapid and evolving IFE industry by providing them with the freedom of choice in the installation and modular expansion of cabin equipment. This is necessary since passenger entertainment and infotainment systems are subject to frequent aircraft upgrades. Generating cabin interface protocols, administering and resolving seat integration issues, cabin communications, and connector standardization are also significant parts of the activities.

Specifically, this APIM authorizes the following activities for Cabin Standards:

- Include the following changes in Supplement 8 to ARINC 628 Part 1, per APIM 15-006 **and APIM 17-009**:
  (1) Provide interfaces for a High-Definition (HD) Landscape Camera. The interface definition will include new video encoding formats, video resolution, and bandwidth requirements.
  (2) Provide specifications for UHD Video streams (4K), video encoding requirements and video screen resolutions.
- Update applicable interfaces for USB 3.1 outlets in passenger seats in Supplement 9 to ARINC 628 Part 2, Supplement 4 to ARINC 809, and Supplement 2 to ARINC 832. **Note: This item is considered closed -- Supplement 9 to ARINC 628 Part 2 completed; and no changes to ARINC 809 or ARINC 832.**
- Supplement 4 to ARINC 628 Part 9 – to replace references to legacy network system components that are no longer in use or have been replaced (e.g., CNSU) to be in line with current systems, e.g., ARINC 628 Part 1 802.11n wireless access points. **Note: This item is considered closed -- Supplement 4 to ARINC 628 Part 9 completed.**
- **Supplement 4 to ARINC 628 Part 0 – to provide a routine update of the standard to bring the overview/summary document up to date with the status of cabin-related standards.**

3.2 Planned usage of the envisioned specification

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

Airbus: A320Neo, Airplane retrofit and forward fit programs

Boeing: 737 Max, 777X, and airplane retrofit programs forward fit programs

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 cabin interfaces for the technologies indicated

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.)

Cabin systems provide entertainment and other services to the passenger. To satisfy the airline's desire for improved services to its passengers, cabin systems are becoming more sophisticated and complex. Home entertainment and office type computing systems and peripherals are finding applications in the cabin to facilitate data handling and communication to the ground. The growing complexity of cabin equipment has resulted in the need to update Cabin Standards in multiple parts. New standards are being added to provide guidance to developers of next generation systems and networks. The benefits of the cabin standards are numerous. They provide the airlines freedom of choice, unit price reduction through increased volume, interchangeable spares, more upgradeable options, and creation of more sub- markets for integrators and software/hardware suppliers. These benefits are being realized on all new aircraft programs, eventually regional and business jets, and retrofit aircraft programs.

4.2.1 Benefits for Airlines

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

4.2.2 Benefits for Airframe Manufacturers

- Equipment interchangeability 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 628 Part 0**
- Supplement 8 to ARINC 628 Part 1
- ~~Supplement 9 to ARINC 628 Part 2~~ **(completed)**
- ~~Supplement 4 to ARINC 628 Part 9~~ **(completed)**

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 8 to ARINC 628 Part 1	3	9	5/16	~~3/17~~ **April 2019**
Supplement 4 to ARINC 628 Part 0	**4**	**12**	**11/17**	**April 2019**
Allocated Resources (max)	~~**5**~~ **12**	~~**15**~~ **36**	**May 2016**	~~**9/17**~~ **April 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

This APIM opens the following ARINC Standards.

- **ARINC Specification 628 Part 0**
- ARINC Specification 628 Part 1 (content per APIMs 15-006, 16-005A, **17-009, and 17-011**)

6.1 Expiration Date for this APIM

October 2019

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 17-010

Supplement 19 to ARINC Specification 429: *Digital Information Transfer System (DITS)*

1.1 Name of Originator and/or Organization

AEEC Executive Secretary

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Group: SAI Subcommittee - Staff activity using email and internet coordination

2.2 Support for the activity

Airlines: TBD

Airframe Manufacturers: TBD

Suppliers: TBD

Others: TBD

2.3 Commitment for Drafting and Meeting Participation

Airlines: TBD

Airframe Manufacturers: TBD

Suppliers: TBD

Others: TBD

2.4 Recommended Coordination with other groups

AeroMACS, AGCS, DLK, GNSS, others as determined by new ARINC 429 labels

3.0 Project Scope

3.1 Description

ARINC 429 is the most widely used data transfer medium in aviation. The first version of ARINC 429 was released in 1977 as the so-called “digital aircraft” emerged in the front lines of service. ARINC 429 is a unidirectional bus; two bus pairs comprise a typical ARINC 429 data bus. The bus is viewed to be highly-reliable and relatively easy to implement in all types of avionics equipment.

ARINC receives a steady flow of requests to add new ARINC 429 labels and the associated word formats. These requests typically come from airframe and avionics suppliers. They tend to be related to new airplane development programs and retrofit programs. These changes are considered normal expansion of the standard. These changes do not change the fundamental

protocol, the clocking, or any physical layer characteristic related to ARINC 429 interoperability.

3.2 Planned usage of the envisioned specification

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

Specify: Future aircraft

Modification/retrofit requirement yes ☒ no ☐

Specify: future retrofit

Needed for airframe manufacturer or airline project yes ☒ no ☐

Specify: Airbus, Boeing and other airplane programs

Mandate/regulatory requirement yes ☐ no ☒

Program and date: No mandate

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

When is the ARINC Standard required? 2018

What is driving this date? The desire for clear communication with industry

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

Update of ARINC Specification 429 is an AEEC staff activity:

- Collect and organize industry inputs from ARINC website and email
- Consider Global Aircraft Tracking (GAT) inputs as well as inputs from related ARINC Standards
- Determine the appropriateness of requests.
    - Avoid ARINC 429 label duplication
    - Check word formats, bit assignments, LSBs, MSBs, etc. for accuracy
    - Cross-check with ARINC 700-series documents
- Arrange new material in the existing ARINC 429 document structure
- Post drafts to ARINC website and coordinate with industry
- Circulate final draft for comment in advance of the AEEC General Session and solicit comments
- Resolve any final comments over web conference and/or email coordination
- No in-person meetings necessary

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: Not applicable

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

Specify: ARINC 429

Product offered by more than one supplier yes ☒ no ☐

Identify: TBD

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

The benefits to airlines are visible in the form of a standardized avionics data bus interface. This benefit is evident in new aircraft development and in retrofit.

4.2.2 Benefits for Airframe Manufacturers

Airframe manufacturers' benefit from standardized interwiring in the production of aircraft.

4.2.3 Benefits for Avionics Equipment Suppliers

The benefit to avionics equipment suppliers is to re-use a standardized bus interface on a multitude of avionics products and systems.

5.0 Documents to be Produced and Date of Expected Result

Supplement 19 to ARINC Specification 429: Digital Information Transfer System (DITS) in April 2018.

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
Supp 19 to ARINC 429	0	0	Oct 2017	April 2018

6.0 Comments

None

6.1 Expiration Date for the APIM

October 2018

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 4

Attachment 4

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 17-011

Define an aircraft cabin and cargo surveillance system in ARINC 628 Part 1 Supplement 8

1.1 Name of Originator and/or Organization

Cabin Systems Subcommittee (CSS)

Dale Freeman, Delta Air Lines

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, United, American,

Airframe Manufacturers: Airbus, Boeing

Others: Latecoere, Panasonic, Thales, ZII, KID Systems

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Delta

Airframe Manufacturers: Airbus, Boeing

Others: Latecoere, Panasonic, Thales, ZII, KID Systems

2.4 Recommended Coordination with other groups

Network Infrastructure and Security (NIS). EFB Subcommittee

3.0 Project Scope (why and when standard is needed)

3.1 Context

Today there is existing a large variety of Cabin and Cargo Surveillance Systems with different technologies (analog, digital, PoE), different topologies, different interfaces and different performance. The customization process, adaption to cabin layouts, network wiring definition and integration of the devices are time consuming and expensive.

3.2 Description

A standardized system meeting a set of agreed to customer functions and needs 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 and current production models

Boeing: 777X

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 **(and should be avoided)**? yes ☒ no ☐

If YES please describe, identify patent holder to avoid:

- Aircraft surveillance and recording system, US 5742336 A
- Surveillance system for aircraft interior, US 6864805 B1
- Aeronef pourvu d'un systeme de surveillance, EP 2694372 A1
- Record and playback system for aircraft, US 6366311 B1
- Latecoere patent ongoing

NOTE: These patents are “system level” patents defining the operation and functionality of an airplane surveillance system. The intent of the standard is to avoid incorporation of any patented technology.

3.4 Issues to be worked

- Functions
  - Network security considerations
  - Security assurance level
  - Video performance and formats
- Architecture
  - Network throughput requirements
  - Network protocols
- Interface
  - Definition of standardized mechanical and electrical interfaces to the aircraft
  - Connectors and cabling and electrical interfaces for Ethernet networking for devices (e.g., cameras)

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 standardized network protocol and interfaces of a Cabin and Cargo Surveillance System reduce the customization effort to a minimum. Shorter lead times and reduced design and integration time lower the cost of this highly customized system.

4.2.1 Benefits for Airlines

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

4.2.2 Benefits for Airframe Manufacturers

- Systems interoperable between suppliers
- System provisions for all aircraft types are predefined and easy to install.
- Reduction of time and cost for customizing due to standardized backbone and interfaces to aircraft and system devices.

4.2.3 Benefits for Avionics Equipment Suppliers

- Eliminates the need to design different systems for different aircraft types.
- Reduction of time and cost for new developments due known interfaces and reuse of proven solutions

5.0 Documents to be Produced and Date of Expected Result

- Supplement 8 to ARINC 628 Part 1

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 8 to ARINC 628 Part 1	6	18	Oct 2017	April 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

6.1 Expiration Date for this APIM

November 2019

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 5

Attachment 5

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 17-012

Update ARINC 808 (3GCN Cabin) and ARINC 809 (3GCN Seats) to define a 3GCN+ architecture capable of supporting multiple aircraft types with fiber optic technology.

Name of Originator and/or Organization

Gerald Lui-Kwan, Boeing

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
Airframe Manufacturers: Boeing, Airbus
Suppliers: Thales, Panasonic, ZII
Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Delta
Airframe Manufacturers: Boeing, Airbus
Equipment Suppliers: Thales, Panasonic, ZII
Others:

2.4 Recommended Coordination with other groups

FOS, NIS

3.0 Project Scope (why and when standard is needed)

ARINC 808 and ARINC 809 were developed as the 3GCN standard architecture for the IFE industry. Network technology is evolving and the development of 10 Gbps fiber interfaces provides a growth path for the 3GCN architecture that will support future IFE features such as 4K UHD video to be incorporated to create a 3GCN+ architecture.

3.1 Description

The ARINC 808 and ARINC 809 defined 3GCN architecture will be revised to incorporate a 10 Gbps fiber backbone routed between the head-end IFE equipment and the Area Distribution Boxes that form the cabin network distribution system.

3.2 Planned usage of the envisioned specification

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

Specify: 777X, Existing Airbus aircraft

Modification/retrofit requirement yes ☒ no ☐

Specify: 777, 747-8

Needed for airframe manufacturer or airline project yes ☐ no ☒

Specify:

Mandate/regulatory requirement yes ☐ no ☒

Program and date: None

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

Specify: ARINC 808 and ARINC 809 3GCN

When is the ARINC Standard required? 2019

What is driving this date? Certification of the 777X

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

- Incorporation of 10 Gbps fiber

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 purpose of the project is to update to ARINC 808 and ARINC 809 to incorporate performance enhancements to the 3GCN architecture creating a 3GCN+ architecture that is applicable to multiple aircraft models.

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4.2.1 Benefits for Airlines

Airlines will benefit from a revised standardized 3GCN+ architecture that provides an IFES growth platform that supports new features such as 4K UHD video distribution.

4.2.2 Benefits for Airframe Manufacturers

Standardized products from a variety of suppliers applicable to multiple airplane platforms.

4.2.3 Benefits for Avionics Equipment Suppliers

Revision of an existing architecture that incorporates new and existing technology and improves system performance.

5.0 Documents to be Produced and Date of Expected Result

Supplement 3 to ARINC 808 and Supplement 4 to ARINC 809.

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 3 to ARINC 808 & Supplement 4 to ARINC 809	*8*	*24*	*10/2017*	*10/2019*

* Meetings reflect ongoing CSS activities responsible for multiple ARINC Standards.

6.0 Comments

None.

6.1 Expiration Date for the APIM

January 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 17-013

Supplement 8 to ARINC Specification 628 Part 1: *Cabin Equipment Interfaces,* Definition of Cell Phone Modem Standards for IFE

1.1 Name of Originator and/or Organization

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, TAP Portugal, United

Airframe Manufacturers: Airbus, Boeing

Suppliers: Rockwell-Collins, Thales, ZII

Others:

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: Delta

Airframe Manufacturers: Airbus, Boeing

Equipment Suppliers: Rockwell-Collins, Thales, ZII

Others:

2.4 Recommended Coordination with other groups

NIS, SAI

3.0 Project Scope (why and when standard is needed)

The airframe manufacturers are increasingly installing cell modems for communication of cabin systems with ground infrastructure (e.g., WLAN, UMTS, LTE). There is a high effort necessary to integrate the cell modems, as all cell modems from various suppliers are different in size, mounting method, interface location and installation location. Standardization of form and fit of the cell modem will enable a particular installation location to be used for cell modems available from different suppliers. This project aims to:

- Define the form factor for a cell modem.
- Define mounting method for a cell modem.

3.1 Description

The harmonization of form and fit of cell modems from different suppliers allows the airframe manufacturers to define a dedicated location in each aircraft type for such equipment.

3.2 Planned usage of the envisioned specification

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

Specify: All Airbus A/c

Modification/retrofit requirement yes ☐ no ☒

Specify: Airlines are retrofitting wireless networks into their existing fleets to provide passenger and crew connectivity.

Needed for airframe manufacturer or airline project yes ☒ no ☐

Specify:

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? TBD

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: Not applicable

3.3 Issues to be worked

- Form and fit of the cell modem.
- Max weight and max heat dissipation.
- Switching logics.
- Battery requirements.
- Antenna location(s).
- Network security considerations (coordinate with NIS).

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: ZII, others TBI

4.2 Specific project benefits (Describe overall project benefits.)

The purpose of the project is to develop and standardize the form and fit of cell modem.

4.2.1 Benefits for Airlines

Airlines will benefit by reduction of lead time and lower integration cost.

4.2.2 Benefits for Airframe Manufacturers

Standardized products from a variety of suppliers allow for dedicated installation locations and provisions independent of the suppliers.

4.2.3 Benefits for Avionics Equipment Suppliers

The equipment suppliers get a predefined interface definition and avoid late equipment changes and requalifications.

4.3 Meetings and Expected Document Completion

The following table identifies the number of meetings and meeting days for the overall Cabin Systems Subcommittee effort.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Supplement 8 to ARINC 628P1	6	18	Oct 2017	April 2019

Reflects all CSS meetings responsible for several APIMs in work. In addition to the meetings identified above, the CSS will have virtual meetings to develop preliminary pin assignments and connector definitions.

5.0 Comments

None.

5.1 Expiration Date for the APIM

October 2019

Completed forms should be submitted to the AEEC Executive Secretary.