AEEC

Together "We Set the Standard."

To	Aviation Industry	**Date**	October 15, 2020
From	P. J. Prisaznuk AEEC Executive Secretary & Program Director pjp@sae-itc.org tel +1 443-254-0528	**Reference**	20-090/AXX-232 lth

Subject **AEEC Work Program for 2020-2021**
AEEC Mid-Term Session
October 8, 2020

Summary The AEEC Executive Committee approved two additional project proposals during the AEEC Mid-Term Session:

APIM Number	AEEC Sub-Committee	APIM Description
20-002	NIC	**Supplement 21 to ARINC Specification 600:** *Air Transport Avionics Equipment Interfaces*
19-010A	CDS	**Supplement 9 to ARINC Specification 661 Part 1:** *Cockpit Display System Interfaces to User Systems - Avionics Interfaces, Basic Symbology, and Behavior* **Supplement 1 to ARINC Specification 661 Part 2:** *Cockpit Display System Interfaces to User Systems - User Interface Markup Language (UIML) for Graphical User Interfaces*.

In summary, the AEEC presently has 44 Standards in work, 15 new AEEC Project Papers, plus 29 Supplements to existing ARINC Standards. The approved statement of work for two projects approved in October is attached to this document in the form of an APIM (ARINC Proposal to Initiate/Modify an ARINC Standard).

Action 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 all 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/activities/aeec*.

cc AEEC Executive Committee, CDS, NIC, SAI

Attachment 1

Attachment 1

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 20-002

Supplement 21 to ARINC Specification 600: Air Transport Avionics Equipment Interfaces

Size 4 ARINC 600 Connector, Rack and Panel (960 pins)

1.1 Name of Originator and/or Organization

AIRBUS

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

ARINC 600 Connector Working Group

Chairman TBD

2.2 Support for the Activity (as verified)

Airlines: TBD

Airframe Manufacturers: AIRBUS

Suppliers: RADIALL / SOURIAU / TE

Others: to add system suppliers → AIRBUS AVIONICS (internal suppliers)

2.3 Commitment for Drafting and Meeting Participation (as verified)

Airlines: TBD

Airframe Manufacturers: AIRBUS

Suppliers: RADIALL / SOURIAU / TE

Others: to add system suppliers → AIRBUS AVIONICS (internal suppliers)

2.4 Recommended Coordination with other groups

Cabin Systems Subcommittee

SAI Subcommittee

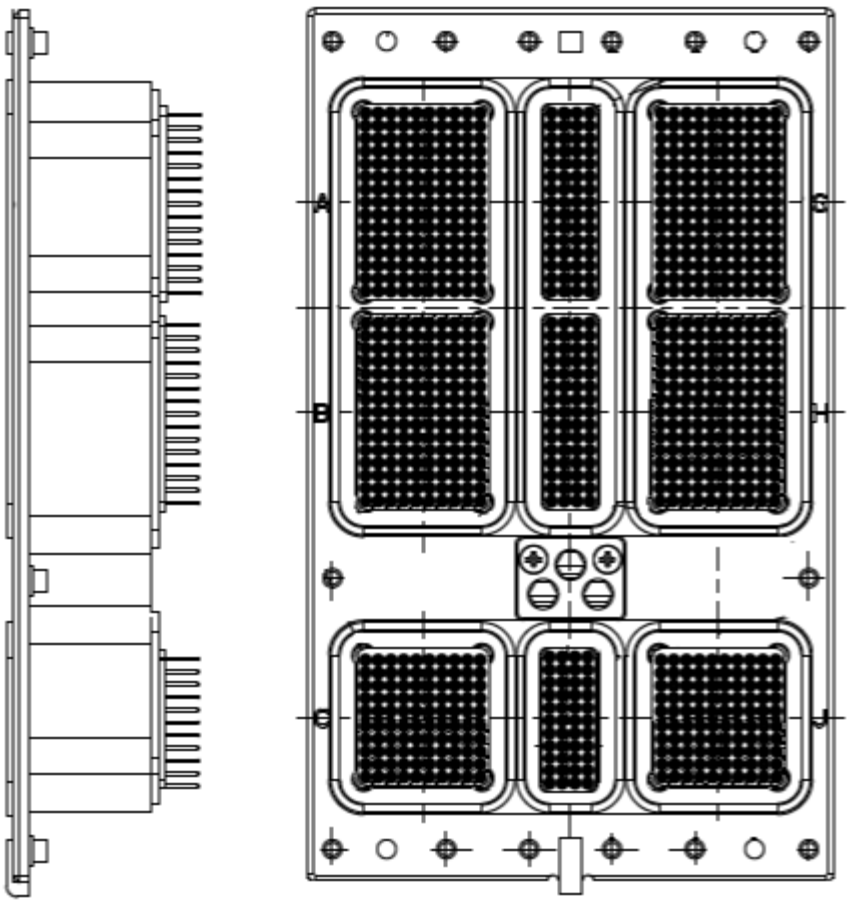
3.0 Project Scope (why and when standard is needed)

3.1 Description

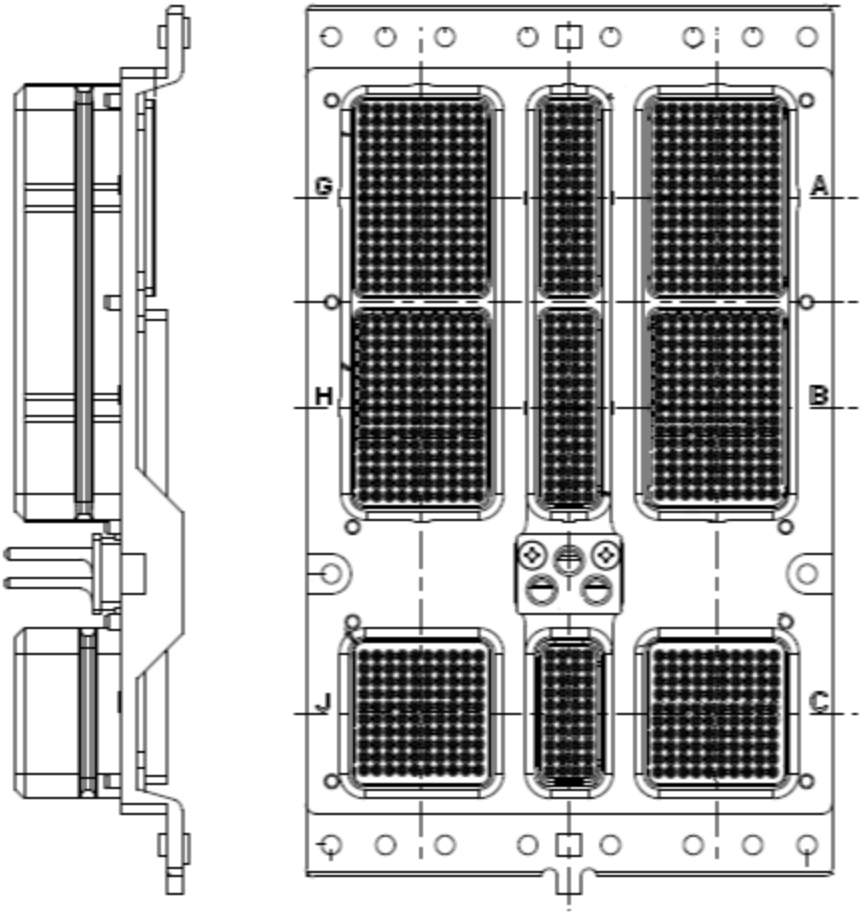
The aim is to increase:

- New connector size with 3 additional cavities
- Shell number available
- Pins number

See attached presentation.



Receptacle connector



Plug connector

ARINC 600 performance expected to be defined, both electrical and mechanical.

3.2 Planned usage of the ARINC Standard

Note: New airplane programs must be confirmed by the aircraft 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: (A320 & 2023 for testing)

Needed for airframe manufacturer or airline project yes ☒ no ☐

Specify: (A320 & 2023 for testing)

Mandate/regulatory requirement yes ☐ no ☒

Program and date: (program & date)

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

Specify: ARINC 600 standard

When is the ARINC standard required? Dec 2021

What is driving this date?

to secure system architecture new development with buy strategy

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

(Describe the major issues to be addressed.)

Additional cavities with existing ARINC 600 shells (cf. drawing).

3.4 Security Scope

Is Cyber Security Impacted (if yes, check box(es) below) yes ☐ no ☒

Aircraft Control Domain yes ☐ no ☒

Airline Information Services Domain yes ☐ no ☒

PAX Information and Entertainment Systems yes ☐ no ☒

Other _____ yes ☐ no ☒

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: RADIALL / SOURIAU / TE

4.2 Specific Project Benefits

Offer more PIN contact per avionics equipment to system.

4.2.1 Benefits for Airlines

Enabler for more integrated systems (e.g. Reduce number of avionics S/N)

4.2.2 Benefits for Airframe Manufacturers

Offer more PIN contact per avionics equipment to system,

4.2.3 Benefits for Avionics Equipment Suppliers

Foster an ecosystem around a new standardized connector.

5.0 Documents to be Produced and Date of Expected Result

ARINC 600 Standard update for December 2021.

5.1 Meetings and Expected Document Completion

6 meetings to be anticipated during the 18 months

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 600	*6*	*18*	*06/2020*	*12/2021*

Please note the number of in-person meetings and the number of meeting days to be supported by the ARINC IA Staff.

Please add a statement describing the frequency of web conferences.

6.0 Comments

These meetings will be held online until in-person travel is viable.

6.1 Expiration Date for the APIM

December 2022

Completed forms should be submitted to Paul Prisaznuk (pjp@sae-itc.org)
AEEC Executive Secretary & Program Director

Attachment 2

Attachment 2

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 19-010A

This APIM proposes development of two documents as follows:

Supplement 9 to ARINC Specification 661 Part 1: *Cockpit Display System Interfaces to User Systems - Avionics Interfaces, Basic Symbology, and Behavior*

Supplement 1 to ARINC Specification 661 Part 2: *Cockpit Display System Interfaces to User Systems - User Interface Markup Language (UIML) for Graphical User Interfaces*.

1.1 Name of Originator and/or Organization

Cockpit Display Systems (CDS) Subcommittee

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Cockpit Display Systems (CDS) Subcommittee

Co-Chairman: Brian Gilbert, The Boeing Company

Co-Chairman: Sofyan Su, Airbus

2.2 Support for the activity (as verified)

Organizations: Airbus, Boeing, Dassault Aviation, Ansys, TP Group plc, GE Aviation, Garmin, Honeywell, Presagis, Collins Aerospace, Thales AVS, Elbit Systems, US Army, Safran Aerosystems, Northrup Grumman.

2.3 Commitment for Drafting and Meeting Participation (as verified)

Organizations: Airbus, Boeing, Dassault Aviation, Ansys, TP Group plc, GE Aviation, Garmin, Honeywell, Presagis, Collins Aerospace, Thales AVS, US Army, Safran Aerosystems.

2.4 Recommended Coordination with other groups

The following AEEC Subcommittee activities are relevant to this topic:

- SAI Subcommittee

3.0 Project Scope (why and when standard is needed)

3.1 Description

Develop and maintain ARINC 661 flight deck display interface standards for new airplane development programs and for retrofit programs, including Airbus A380, A350, A400M, Boeing 787, 737 MAX, 777X, KC-46A, COMAC C919, Regional Aircraft, General Aviation (GA) and rotorcraft. Ensure growth for CNS/ATM applications that provide advanced operational concepts that will increase aviation safety, capacity, and efficiency.

ARINC 661 defines the basic building blocks through which a Graphical User Interface (GUI) for display systems can be developed. ARINC 661 is being expanded to meet OEM requirements for new airplane programs. ARINC 661 will enable flight crews to interact with the CDS using input devices such as cursor control device or touchscreen technology.

ARINC Specification 661 Part 1 will be updated through the preparation of Supplement 9 topics identified in Section 3.3.

ARINC Specification 661 Part 2 will be updated to extend the User Interface Markup Language with features defined in Section 3.3.

3.2 Planned usage of the envisioned specification

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

Airbus: A380, A350, A400M

Boeing: 787, 737 MAX, 777X, KC-46A

Other: COMAC C919, Regional Aircraft, General Aviation (GA) and rotorcraft

Modification/retrofit requirement yes ☐ no ☒

Specify: N/A

Needed for airframe manufacturer or airline project yes ☐ no ☒

Specify: N/A

Mandate/regulatory requirement yes ☐ no ☒

Specify: N/A

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

Specify: ARINC 661

When is the ARINC standard required?

- **Supplement 9** to ARINC 661 Part 1 is expected **on or before April 2023.**
- **Supplement 1** to ARINC 661 Part 2 is expected **on or before April 2023.**

What is driving this date?

Submission to General Session in May 2023.

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

Start with ARINC 661-8 Part 1 Gray Cover. Prepare Supplement 9 to ARINC 661 with extensions to support future aircraft programs.

- **Metadata for runtime protocol**
- **Super layer formalization and concept of "window"**
- **Formalize Extended Block header**
- **Definition File header extensions**
- **Layer-level priority/indication of criticality**
- **Handling of terrain in 3D maps, ExternalSource3D widget**
- **Dimming (layer/widget level)**
- **Enforcement of parent/child relationships across multiple layers of nesting**
- **Support for copy and paste**

- **Rules for widget events**
- **Metadata naming conventions**
- **New widgets and extensions (TBD – as proposed by members)**
- **Deferred action items and metadata issues**
- **Doc gen tool improvements**

Start with ARINC 661 Part 2 Gray Cover. Update the document to reflect material provided in Supplement 9 to ARINC 661 Part 1.

- **ARINC 661 Part 1 & Part 2 coupling**
- **Scripting Language definition**
- **Addition of features (Map symbols, Complex text**
- **Interface groups inheritances**

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: Aircraft installation interface may use any suitable protocol for data delivery, including ARINC 664 Ethernet.

Product offered by more than one supplier yes ☒ no ☐

Identify: Aircraft manufacturers, CDS application developers

4.2 Specific project benefits (Describe overall project benefits.)

4.2.1 Benefits for Airlines

Supplement 9 to ARINC Specification 661 Part 1 will define a common CDS interface data formats, graphical user interface (GUI). The idea is to support the widest possibilities of airplane types, for both forward fit and retrofit using common data interface. This document will enable benefits to be realized at lower costs to the airlines and with less risk to the suppliers.

Supplement 1 to ARINC Specification 661 Part 2 will define a language (UIML) that can be used by any airframe manufacturer on any kind of aircraft to specify graphical user interface look and behavior. This document will enable benefits to be realized at lower costs to the airlines and with less risk to the suppliers.

4.2.2 Benefits for Airframe Manufacturers

This standard will provide several benefits to Airframe manufacturers:

- The airframe manufacturers can define a common CDS interface for all aircraft implementations.
- Flexibility to add new CDS capabilities by adding to existing platforms.

- The airframe manufacturers can use a common language, from CDS mockups and prototyping, to maintenance and training, graphical user interfaces.
- Reduce the cost of development and management of the graphical user interface specification.
- Ability to specify modern user interface (data fusion, multi-touch, animation, 3D, Post WIMP interface).

4.2.3 Benefits for Avionics Equipment Suppliers

This standard will provide several benefits to Avionics Suppliers:

- Reduces CDS cost of development compared to non-standard platforms
- Allows for an open marketplace for manufacturers to supply interoperable equipment.

5.0 Documents to be Produced and Date of Expected Result

Supplement 9 to ARINC Specification 661 Part 1: *Cockpit Display System Interfaces to User Systems: Avionics Interfaces, Basic Symbology, and Behavior*. A mature document is expected in April 2023.

Supplement 1 to ARINC Specification 661 Part 2: *Cockpit Display System Interfaces to User Systems: User Interface Markup Language (UIML) for Graphical User Interfaces*. A mature document is expected in April 2023.

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 9 to ARINC 661 Part 1	*5**	*25*	*06/2020*	*04/2023*
Supplement 1 to ARINC 661 Part 2				

*** Note: Meetings are presumed to be on-line until further notice. Additional web conferences will be held each month, one web conference for each document in work.**

6.0 Comments

This activity is an extension of AEEC's Cockpit Display Systems (CDS) Subcommittee activity previously authorized by APIM 08-004C.

6.1 Expiration Date for the APIM

April 2023

Completed forms should be submitted to Paul Prisaznuk,
AEEC Executive Secretary and Program Director (pjp@sae-itc.org).