AEEC

Together "We Set the Standard."

To	CDS Subcommittee	**Date**	April 1, 2021
From	Larry A. Hesterberg *larry.hesterberg@sae-itc.org* tel: +1-240-334-2586	**Reference**	21-999/SMA-216 lth

Subject **Meeting Announcement**
Cockpit Display Systems (CDS) Subcommittee

Chairman **Brian Gilbert, Boeing**
Sofyan Su, Airbus

Host **ARINC Industry Activities**

When **Wednesday and Thursday, June 2-3, 2021**

Tuesday and Wednesday, June 8-9, 2021

Meeting schedule is as follows:

Meeting Times	US Pacific	US Eastern	Central European
Start	0600	0900	1500
Break	0745	1045	1645
Re-Convene	0815	1115	1715
Adjourn	1000	1300	1900

Note: June 2 and June 8 will be dedicated to the development of **Supplement 9 to ARINC Specification 661, Part 1**.

June 3 and June 9 will be dedicated to **Supplement 1 to ARINC Specification 661, Part 2**, and any remaining topics.

Where This meeting will be 100% virtual. Details to be provided.

Instructions Please notify the Industry Activities staff of your intention to attend by registering online at: *https://www.aviation-ia.com/events*.

This meeting is open to all interested parties. Individuals requesting time on the agenda should contact Larry A. Hesterberg before May 18, 2021. The agenda and web conference instructions will be distributed one week prior to the meeting.

Activity Scope

The Cockpit Display Systems (CDS) Subcommittee develops ARINC 661, Cockpit Display System Interfaces to User Systems. It is being expanded to meet OEM requirements for new aircraft. ARINC 661 defines a Graphical User Interface (GUI) to displays. It also defines GUI objects. ARINC 661 will enable flight crews to interact with the CDS using a cursor control device.

Meeting Objectives

CDS Subcommittee Meeting

The CDS Subcommittee will meet June 2, 3, 8, and 9, 2021. The meeting will cover content and actions concerning the following:

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

Supplement 9 will add new material as follows:

- 20-06: Document structure
- 20-01: Super Layer formalization
- 20-15: Extended Block header formalization
- 20-29: Color/fill extensions
- Metadata progress
- Other Action Items

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

Supplement 1 will add new material as follows:

- ARINC 661 Part 1 & Part 2 coupling
- Scripting Language definition
- Clarifications on Touch primitives
- Other Action Items

This activity is authorized by APIM 19-010A. The APIM is included as Attachment 1.

Standards to be Produced

The goals of the meeting are to reach consensus on the content intended for inclusion in:

- Supplement 9 to ARINC Specification 661 Part 1
- Supplement 1 to ARINC Specification 661 Part 2

Mature documents are expected to emerge in April 2023.

Attachment 1

Attachment 1

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).