

## ARINC Project Initiation/Modification (APIM)

### 1.0 Name of Proposed Project **APIM 19-010**

This APIM proposes development of two documents as follows:

**Supplement 8 to ARINC Specification 661 Part 1: Cockpit Display System Interfaces to User Systems - Avionics Interfaces, Basic Symbology, and Behavior**

**ARINC Project Paper 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.

#### 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 B787, B737 MAX, B777X, KC-46A, NMA, 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) to 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 a cursor control device or touchscreen technology.

ARINC Specification 661 Part 1 will be updated through the preparation of Supplement 8 topics identified in Section 3.3, the material needed to describe Part 1 and Part 2, and the relation between the two parts.

ARINC Project Paper 661 Part 2 will define the User Interface Markup Language which will allow developers to specify the interface and the look and behavior of any graphical user interface, in particular ARINC 661 building blocks.

### 3.2 **Planned usage of the envisioned specification**

New aircraft developments planned to use this specification yes  no

Airbus: A380, A350, A400M

Boeing: B787, B737 MAX, B777X, KC-46A, NMA

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 8 to ARINC 661 Part 1 is expected by April 2020.
- ARINC Project Paper 661 Part 2 is expected by April 2020.

What is driving this date?

Submission to General Session in May 2020.

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

If NO please specify solution:

Both projects are nearing completion.

Are Patent(s) involved? yes  no

If YES please describe, identify patent holder: \_\_\_\_\_

### 3.3 **Issues to be worked**

Start with ARINC 661-7 Part 1 Gray Cover and update the document to include:

- Metadata definition (full XML schema)
- Map3D widgets
- Update to PictureBox for picture atlasing
- Column widget
- Scroll extensions
- StyleSetParameter extension
- Updates to Animation Widgets
- Other new widgets and extensions as warranted
- Harmonization with Part 2

ARINC Project Paper 661 Part 2 will include the following:

- Metadata definition (full XML schema)
- Popup primitive
- Focus Management
- Graphical Bounding box
- Styling
- Basic Scripting Definition
- Glossary

## 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 8 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.

ARINC Project Paper 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 8 to ARINC Specification 661 Part 1: Cockpit Display System Interfaces to User Systems: Avionics Interfaces, Basic Symbolology, and Behavior.** A mature document is expected in April 2020.

**ARINC Project Paper 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 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.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Supplement 8 to ARINC Specification 661 Part 1	2	10*	06/2019	04/2020
ARINC Project Paper 661 Part 2		(two 5-day mtgs)		

\* Note: Table shows in-person meetings. 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 08-004.

## 6.1 Expiration Date for the APIM

April 2020

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