



**To** SAI Subcommittee **Date** December 13, 2021  
**From** P. J. Prisaznuk **Reference** 21-999/SMA-254 lth  
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**Subject** Meeting Announcement  
Systems Architecture and Interfaces (SAI) Subcommittee

**Chairman** Rich Stillwell, United Airlines

**Host** ARINC Industry Activities

**When** SAI Subcommittee – Thursday, February 3, 2022  
Meeting schedule:

Meeting Times	US Pacific	US Eastern	Central European
Start	0700	1000	1600
Adjourn	0900	1200	1800

**Where** This meeting will be conducted online. Details to be provided.

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

AEEC meetings are open to all interested parties. Individuals requesting time on the agenda should contact Paul Prisaznuk before January 31, 2022.

## **SAI Meeting Objectives**

### **SAI Subcommittee Meeting**

The Systems Architecture and Interfaces (SAI) Subcommittee will discuss avionics system-level guidelines intended for new airplanes and major retrofit programs. It will discuss emerging Communication, Navigation, and Surveillance (CNS) equipment.

#### **Avionics Architectures for CNS/ATM Equipment**

The SAI Subcommittee will consider a proposal to prepare **ARINC Project Paper 660C: CNS/ATM Avionics Architectures Supporting NEXTGEN/SESAR Concepts** (*working title*).

Boeing has prepared an APIM for consideration. The scope and schedule for updating this document will be discussed. See Attachment 1.

#### **5G Cellular Impact on Aircraft**

The SAI Subcommittee will continue its discussion of 5G terrestrial communication plans and potential impact to the radio altimeter. The FAA has issued an Airworthiness Directive (AD) on this topic.

Satellite communication systems may also be susceptible to 5G signals. A status report will be provided.

KLM has prepared an APIM for consideration. See Attachment 2.

#### **Additional Proposals to Initiate/Modify ARINC Standards**

The SAI Subcommittee will consider several project requests for activities expected to take place during 2022 through 2023. These include:

- Electronic Flight Bag
- Navigation Database
- Others to be announced

The work program for 2022 will be discussed.

**cc**

APEX, CSS, SDL

# Attachment 1

## ARINC Project Initiation/Modification (APIM)

- 1.0 Name of Proposed Project** **APIM 22-001**  
**ARINC Project Paper 660C:** CNS/ATM Avionics Architectures Supporting NextGen/SESAR Concepts (**working title**)
- 1.1 Name of Originator and/or Organization**  
Jessie Turner, The Boeing Company
- 2.0 Subcommittee Assignment and Project Support**
- 2.1 Suggested AEEC Group and Chairman**  
Systems Architecture and Interfaces (SAI) Subcommittee  
Chairmen: Rich Stillwell, United
- 2.2 Support for the activity (as verified)**  
Airlines: FedEx  
Airframe Manufacturers: Airbus, Boeing, Embraer  
Suppliers: L3-Harris - ACSS  
Others:
- 2.3 Commitment for Drafting and Meeting Participation (as verified)**  
Airlines:  
Airframe Manufacturers: Airbus, Boeing, Embraer  
Suppliers: L3-Harris - ACSS  
Others:
- 2.4 Recommended Coordination with other groups**  
ICAO ICNSS/TF, FAA NextGen, SESAR/SJU, etc.
- 3.0 Project Scope (why and when standard is needed)**
- 3.1 Description**  
ARINC Report 660B: *CNS/ATM Avionics Architectures Supporting NextGen / SESAR Concepts* was published in January 2014. Since this time, there have been a number of significant industry developments in the areas of Communication, Navigation, and Surveillance (CNS) and Air Traffic Management (ATM). ARINC Report 660B should be updated to capture the benefits of new technologies and to identify impacts to avionics architectures that would apply to new and retrofit airplanes. Potential topics include Internet Protocol Suite (IPS), NextGen Airborne Collision Avoidance System (ACAS-X<sub>AO</sub>), Automatic Dependent Surveillance – Broadcast (ADS-B), L-band Digital Aeronautical Communication System (LDACS), and a number of others.  
The product from this effort will be ARINC Report 660C.
- 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:            Future airplane developments

    Boeing:           Future airplane developments

    Other:

Modification/retrofit requirement      yes  no

    Specify:            Modernized/updated systems

Needed for airframe manufacturer or airline project      yes  no

    Specify:

Mandate/regulatory requirement      yes  no

    Program and date:

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

    Specify            (e.g., ARINC 429)

When is the ARINC standard required?    May 2024

What is driving this date?    Logical progression of report preparation

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

Updates to the ARINC 660B document sections, including, but not limited to:  
 §1 Introduction - Identify updates to FAA NextGen, European SESAR, and ICAO ASBU plans, and other sub-sections as needed

**Discuss role that CNS/ATM systems, both air and ground, play in operational efficiency and long-term sustainability of aviation.**

§2 INTRODUCTION TO NEXTGEN/SESAR CONCEPTS – Provide updates to Satellite Navigation infrastructure deployment & standards development plans, Datalink Communication deployment plans, ADS-B In applications, SWIM, and others. Add new technologies, including IPS, LDACS, ACAS-X<sub>AVIO</sub>, Space-based ADS-B, and others.

§3 AVIONICS REFERENCE ARCHITECTURES – Add new sub-section for Avionics Architecture – 2020’s

§4 IMPACTS ON AIRBORNE FUNCTIONAL ARCHITECTURES – Provide updates to potential impacts to systems to accommodate NextGen/SESAR functionality.

§5 RECOMMENDED AVIONICS ARCHITECTURES TO SUPPORT NEXTGEN/SESAR – Provide updates to the mandate summary and Retrofit Requirements for each of the Avionics Architectures. Add new sub-section for Avionics Architecture – 2020’s.

§6 IMPACTS ON STANDARDS – Identify additional ARINC Standards that may require revisions to support NextGen/SESAR airspace initiatives.

### 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

(Discuss the level of cyber security guidance needed, the specific topics to be covered, and whether these topics are covered elsewhere by reference, e.g., ICAO Documents, RTCA/EUROCAE Standards, existing ARINC Standards, or if they need to be defined by a new or revised ARINC Standard.)

### 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? N/A      yes  no   
    Identify:

#### 4.2 Specific project benefits (Describe overall project benefits.)

##### 4.2.1 Benefits for Airlines

Supports airline planning and investment decisions.

##### 4.2.2 Benefits for Airframe Manufacturers

Supports airframer planning and investment decisions for production, retrofit bulletins, and future airplane developments.

##### 4.2.3 Benefits for Avionics Equipment Suppliers

Supports supplier planning and investment decisions for equipment upgrades and new equipment design development.

### 5.0 Documents to be Produced and Date of Expected Result

ARINC Project Paper 660C (May 2024)

#### 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 660C	6	18	May 2022	May 2024

\* Shows regularly scheduled SAI Subcommittee meetings between May 2022 and May 2024. Web conferences are also expected to be held as needed.

**6.0 Comments**

None

**6.1 Expiration Date for the APIM**

May 2024

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

# Attachment 2



## **ARINC Project Initiation/Modification (APIM)**

- 1.0 Name of Proposed Project** **APIM 22-xxx**  
Improve 5G interference rejection in the overall Navigation and Communication systems operating between 700MHz and 10 GHz.
- 1.1 Name of Originator and /or Organization**  
P.vandenBerg – AirFrance/KLM
- 2.0 Subcommittee Assignment and Project Support**
- 2.1 Suggested AEEC Group and Chairman**  
New Activity
- 2.2 Support for the Activity (as verified)**  
Airlines: Several  
Airframe Manufacturers: Boeing, Airbus  
Suppliers: Thales, Rockwell Collins, Honeywell  
Others:
- 2.3 Commitment for Drafting and Meeting Participation (as verified)**  
Airlines:  
Airframe Manufacturers:  
Suppliers:  
Others:
- 2.4 Recommended Coordination with other Groups**  
Radio-Altitude(new), Inmarsat SATCOM 741, Iridium, GPS, DME, to be determined, depending on the effects by 5G deployment. RTCA SC239 is working a proposal to mitigate LRRRA potential interference issues, expected release end 2022.
- 3.0 Project Scope (why and when standard is needed)**
- 3.1 Description**  
The roll-out of 5G telecom goes with a pace, which leaves no time to the airline industry, to be able to anticipate any possible effects to existing Radio's in the frequency range of 1 – 10GHz. On the 5<sup>th</sup> of december 2021, this new telecom innovation will be switched on in the USA. The 5G channels, named as LTE Bands, have an odd way of numbering, but will pop-up just next to GPS, Iridium, SATCOM or even DME. As the 30-year-old standards for these radio's had little measures to cope with possible interference from adjacent bands, the new base station downlinked RF power levels may overwhelm (block) receivers. A defined set of LTE channels per country will be used, therefore the effects will be different in each 5G – deployed country.  
First identify which Nav/Comm systems are susceptible to interference by assigned 5G LTE channels. Check this on a global scale. Anticipate to very near-band deployment.

Project system changes needed to prevent any effect by Basestations downlinked LTE channels which form a threat. Seek compliance with existing RTCA MOPS and ARINC specs receiver characteristics such as bandwidth, sensitivity, modulation.

Consult suppliers to propose changes.

### 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:            (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?      \_\_\_\_\_(LRRRA depending MOPS  
SC239 end of 2022)\_\_\_\_\_

What is driving this date? \_\_\_\_\_(Possible FAA/EASA  
Mandate)\_\_\_\_\_

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.)

### 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

(Discuss the level of cyber security guidance needed, the specific topics to be covered, and whether these topics are covered elsewhere by reference, e.g.,

ICAO Documents, RTCA/EUROCAE Standards, existing ARINC Standards, or if they need to be defined by a new or revised ARINC Standard.)

**4.0 Benefits**

**4.1 Basic Benefits**

Operation 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**

(Describe any benefits unique to the airline point of view.)

**4.2.2 Benefits for Airframe Manufacturers**

(Describe any benefits unique to the airframe manufacturer's point of view.)

**4.2.3 Benefits for Avionics Equipment Suppliers**

(Describe any benefits unique to the equipment supplier's point of view.)

**5.0 Documents to be Produced and Date of Expected Result**

Identify Project Papers expected to be completed per the table in the following section.

**5.1 Meetings an Expected Document Completion**

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

<b>Activity</b>	<b>Mtgs</b>	<b>Mtg-Days (Total)</b>	<b>Expected Start Date</b>	<b>Expected Completion Date</b>
<i>Document a</i>	<i># of mtgs</i>	<i># of meeting days</i>	<i>Mm/yyyy</i>	<i>Mm/yyyy</i>
<i>Document b</i>	<i># of mtgs</i>	<i># of meeting days</i>	<i>Mm/yyyy</i>	<i>Mm/yyyy</i>

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**

(Insert any other information deemed useful to the AEEC Executive Committee for managing this work.)

**6.1 Expiration Date for the APIM**

April/October 20xx

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