



To EFB Subcommittee **Date** September 19, 2017

From Peter Grau
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Subject **Meeting Announcement**
Electronic Flight Bag (EFB) Subcommittee

Chairman **Sonja Schellenberg, Lufthansa Systems**

When **November 13, 2017**
November 13, 2017 from 0900 to 1700 Meeting Room 307

Where Meeting Location
Suntec Singapore Convention and Exhibition Centre
1 Raffles Boulevard
Singapore 039593
tel: +65 (0)6337 2888
fax: +65 (0)6825 2222

Instructions Please notify ARINC Industry Activities of your intention to attend by registering online at: <http://www.aviation-ia.com/events/>
Comments or questions regarding any of the agenda items are invited. If you wish any material to be circulated prior to the meeting, please submit your proposals via e-mail to Peter Grau at peter.grau@sae-itc.org by **November 1, 2017**.

Meeting Objectives The EFB Subcommittee will meet November 13, 2017 in Singapore. The purpose of the meeting is to continue development of **ARINC Project Paper 840A: Electronic Flight Bag (EFB) Application Control Interface (ACI) Standard for Tablet Devices** as described in APIM 17-006. Specifically, update application launch, control, and information sharing capabilities for the COTS tablet environment predominantly in use today.

In addition, the subcommittee will initiate development of **Supplement 8 to ARINC Specification 834: Aircraft Data Interface Function (ADIF) and ARINC Project Paper 8xx: Aircraft Server, Communications and Interface Standard** as described in APIMs 17-014 and 17-015 respectively (pending AEEC Executive Committee approval). Please see attached.

Related Activities

Several other EFB events are being planned for this week in Singapore:

- **EFB Expo** November 14: 1200-1700 (Suntec Convention Ctr.)
- **EFB Users Forum** November 15: 0900-1700 (Suntec Convention Ctr.)
- **EFB Users Forum** November 16: 0900-1700 (Suntec Convention Ctr.)

The EFB Users Forum specifics are provided in AEEC Letter 17-999/SMA-033.

Travel Information

The Suntec Singapore International Convention and Exhibition Centre is located approximately 20 kilometers (12 miles) from Singapore Changi Airport.

From Singapore Changi Airport (SIN):

By Taxi: Travel time is approximately 20 minutes and the fare will be in the range of S\$ 40.

By Bus: Travel time is approximately 30 minutes with the City Airport train to Marina Bay and the fare will be in the range of S\$ 20.

By Subway (MRT): Travel time to station Marina Bay is approximately 45 minutes and the fare will be in the range of S\$ 10.

Attachment 1

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project APIM 17-014

Supplement 8 to ARINC Specification 834: Aircraft Data Interface Function (ADIF),
to define an EFB Software Application to Aircraft Systems Interface Protocol

Software specification only yes no

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group

Electronic Flight Bag (EFB) Subcommittee.

2.2 Support for the activity (as verified)

Organizations: Alaska Airlines, American Airlines, El Al, FedEx, Lufthansa Airlines, Qantas, Southwest Airlines, United Airlines, Airbus, Boeing, Astronautics, Astronics Ballard Technology, Avionica, CMC Electronics, Gulfstream Aerospace, Lextech, Lufthansa Systems, Rockwell Collins, Sabre, SITA, Teledyne, Ultramain, UTC Aerospace Systems, Viasat, Thales, Jeppesen [others, TBI]

2.3 Commitment for Resources (directly from participant)

Organizations: American Airlines, FedEx, Lufthansa, Southwest, Airbus, Boeing, Astronics Ballard Technology, Astronautics, Avionica, CMC Electronics, Gulfstream Aerospace, Rockwell Collins, Sabre, SITA, Teledyne, UTC Aerospace Systems [others, TBI]

2.4 Recommended Coordination with other groups

The EFB Subcommittee will coordinate other subcommittees as needed.

The following activities might be relevant to this topic:

- ARINC Specification 429 and Characteristic 717
- ARINC Specification 619: ACARS Protocols for Avionic End Systems
- ARINC Characteristic 759: Aircraft Interface Device (AID)
- ARINC Specification 840: Electronic Flight Bag (EFB) Application Control Interface (ACI) Standard

3.0 Project Scope

3.1 Description

This APIM proposes an update to ARINC Specification 834 to define a new functional interface (software application level protocol) between crew device applications executing on EFB for direct use by flight, cabin and/or maintenance crew and aircraft avionics systems. This Supplement will address the following two primary types of interface usages:

1. Acquisition of avionics systems data commonly referred to as Air Data Interface Function (ADIF) similar to the definition already documented in ARINC Specification 834
2. Functional Interface to off-aircraft communication systems (e.g., TWLU, ACARS, Broadband)

Additional usage areas for this interface may be explored during the development of this Supplement. This specification is primarily intended for use by end-system applications operating on tablet type (e.g. iPad, Windows Surface) devices but is not limited to this purpose.

Supplement 8 will:

- a. Focus on the end-system software applications executing on crew devices (e.g., EFB)

- b. Define a single software level data exchange protocol for acquiring avionics data and exchange data through off-aircraft communication systems
- c. Provide all acquired avionics data converted into Engineering units to allow direct data consumption by the EFB to avoid end-applications to implement esoteric avionics technology such as ARINC 429 or ARINC 717. Enables multiple applications to interface with aircraft systems independently from each other
- d. Key functions this new protocol is expected to support include:
 - Aircraft Data Interface Function- making aircraft systems data available to the EFB
 - ACARS communication interface – enable sending/receiving ACARS message via the EFB
 - IP/Broadband off-aircraft communication
 - Data storage – enable the EFB to utilize AID mass storage (if provided)
 - Cross-talk between EFBs
 - Print requests for the cockpit printer

The concept adds a layer of abstraction between EFB applications and the protocols defined by ARINC 834 (ADIF) to establish a single data interface, illustrated in Figure 1.

The goal is to eliminate the need for end-system application developers to write separate interfaces for different AIDs (as is currently the case) and to also not be required to provide conversion from raw input data (e.g., ARINC 429 labels) to Engineering units. As part of the update to ARINC 834, the opportunity to simplify the interface mechanics to existing ARINC 834 protocols should also be explored.

Supplement 8 equipment would not require to be directly interfaceable with existing AID and instead communication between the EFB applications and the AID may occur through some type of middle ware system (depicted as the “Common Application-AID Interface Layer” in Figure 1), which, where necessary converts data from the AID specific representation to the one defined via this new standard.

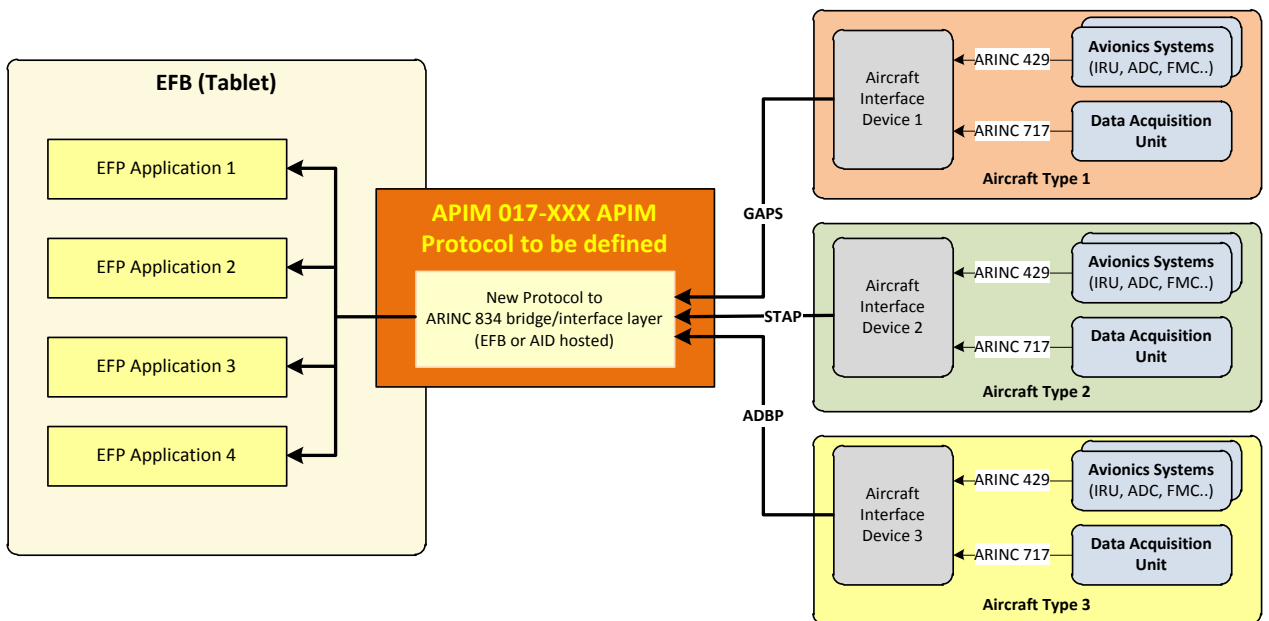


Figure 1: Abstracting the EFB Application to AID Data Interface

3.2 **Planned usage of the envisioned specification**

- New aircraft developments planned to use this specification yes no
- New avionics equipment for major retrofit programs yes no
- Mandate/regulatory requirement yes no
- Program and date: (program & date) Not Applicable
- Modification/retrofit requirement yes no
- Specify Not Applicable
- Airframer and/or airline projects to use this specification yes no
- Once established, it is expected to be used by airframer and/or airline projects using avionics data parameters.
- Is the infrastructure standard for the aircraft defined? yes no
- 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**

EFB application suppliers are finding the need to develop multiple interface for connectivity with various AID solutions. This need is likely due to three different protocol choices being defined in ARINC 834 plus data may be presented in Engineering units or in raw ARINC 429/717 representation requiring the application to perform respective conversions. This represents an extra burden onto application developers in terms of development and software maintenance effort. This APIM aims at addressing this situation to allow applications developers to focus on a single interface implementation and thus to achieve true interoperability.

4.0 **Benefits**

4.1 **Basic benefits**

The main benefit of Supplement 8 is to define a single EFB end-system application to aircraft system functional interface to be developed and maintained by application developers, which reduces development time and software maintenance overhead while at the same time represents a significant step towards achieving interoperability.

- Operational enhancements (reduction in DOC?) yes no
- Form, Fit, Function, (FFF) standard (HW and/or SW):
- (a) ARINC 600 form (only HW) yes no
- (b) Interchangeable fit (plug, mount, SW loading interface, etc.) yes no
- (c) Interchangeable function yes no
- If not fully interchangeable, please explain:
- (d) Interface and protocol standard only, since H/W will not be addressed
 yes no
- (e) Product offered by more than one supplier yes no

The purpose of this proposed project is to establish an open standard that can be implemented by any supplier.

4.2 **Specific project benefits**

- Minimize the overall cost of implementing EFB applications by defining a single protocol interface that is simple to implement.

- Enable the use of software applications developed by third parties.

4.2.1 Benefits for Airlines

This standard will provide several benefits to Airlines:

- Airlines would benefit from lower integration costs, times, and risks.
- Better and more consistent integration of applications leads to better user acceptance.

4.2.2 Benefits for Airframe Manufacturers

- Provide guidance to implement EFB to aircraft systems interface.

4.2.3 Benefits for EFB Equipment and Application Suppliers

- Facilitate communication from EFB and aircraft systems

5.0 Documents to be Produced and Date of Expected Result

Supplement 8 to ARINC Specification 834: Aircraft Data Interface Function (ADIF) by no later than AEEC General Session 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. This activity will be undertaken by the EFB Subcommittee. Monthly teleconferences will be held between face to face meetings to maintain progress.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Supplement 8 to ARINC Specification 834	5	2x1 (w/EFBUF) 3x3 (dedicated EFB SC) 11 total days	Oct 2017	April 2019

Please note the number of meetings, the number of meeting days, and the frequency of web conferences to be supported by the IA Staff.

6.0 Comments

None.

6.1 Expiration Date for the APIM

May 2019

Completed forms should be submitted to the AEEC Executive Secretary.

Attachment 2

ARINC Project Initiation/Modification (APIM)

1.0 Name of Proposed Project **APIM 17-015**
ARINC Specification 8xx: Aircraft Server, Communications, and Interface Standard to provide file server capability, data storage capacity, and broadband connectivity.

Software specification only yes no

2.0 Subcommittee Assignment and Project Support

2.1 Suggested AEEC Group and Chairman

Electronic Flight Bag (EFB) Subcommittee.

2.2 Support for the activity

Organizations: Alaska Airlines, American Airlines, El Al, FedEx, Lufthansa Airlines, Qantas, Southwest Airlines, United Airlines, Airbus, Boeing, Astronautics, Astronics Ballard Technology, Avionica, CMC Electronics, Gulfstream Aerospace, Lextech, Lufthansa Systems, Rockwell Collins, Sabre, SITA, Teledyne, Ultramain, UTC Aerospace Systems, Viasat [others, TBI]

2.3 Commitment for resources (directly from participants)

Organizations: American Airlines, FedEx, Lufthansa, Southwest, United, Airbus, Boeing, Astronautics, Avionica, CMC Electronics, Gulfstream Aerospace, Rockwell Collins, Sabre, SITA, Teledyne, UTC Aerospace Systems [others, TBI]

2.4 Recommended Coordination with other groups

The EFB Subcommittee will coordinate with NIS and Ka/Ku Band Subcommittee
The following activities are relevant to this topic:

- ARINC Specification 619 ACARS Protocols for Avionic End Systems
- ARINC Characteristic 759: Aircraft Interface Device (AID)
- ARINC Specification 834: Aircraft Data Interface Function (ADIF)
- ARINC Specification 840: Electronic Flight Bag (EFB) Application Control Interface (ACI) Standard
- ARINC Specification 841: Media Independent Aircraft Messaging (MIAM)
- ARINC Project Paper 848: Broadband Satellite System Functional Interface Standard

3.0 Project Scope (why and when standard is needed)

3.1 Description

The original ARINC Characteristic 759, published in July 2014, was defined when the tablets were becoming popular as EFB devices. Server, data storage, and off-aircraft communications were not considered. The strong proliferation of tablet EFBs, operational experience gained, and industry demand for server, data storage and off-aircraft communication capabilities requires that this new specification be developed.

Functional characteristics and requirements have evolved with many airlines expressing a need to include data storage, file and application server functions, and broadband communication capabilities. The application server needs result from application developers preferring CPU intensive applications not be executed on tablets.

Consequently, this APIM is aimed at reviewing airlines' expectations regarding functional requirements and defining a new standard that reflects changes in the industry.

The proposed work includes:

- a) Review and refine functional definitions related to the predominant use of tablet type EFB
- b) Define file server / application server capabilities.
- c) Define data storage requirements
- d) Include ability to interface with newly available broadband communications systems
- e) Add information security related aspects specific to EFB leveraging of ARINC PP848.

3.2 **Planned usage of the envisioned specification**

New aircraft developments planned to use this specification yes no

New avionics equipment for major retrofit programs yes no

Mandate/regulatory requirement yes no

Please specify program and date: Not Applicable

Modification/retrofit requirement yes no

Please specify: Not Applicable

Airframer and/or airline projects to use this specification yes no

Once established, it is expected to be used by airframer and/or airline projects using avionics data parameters.

Is the infrastructure standard for the aircraft defined? yes no

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

If 'No' please specify solution:

Patent(s) involved? yes no

If 'Yes' please describe:

5.0 Documents to be Produced and Date of Expected Result

ARINC Specification 8xx: *Aircraft Server, Communications, and Interface Standard* by no later than AEEC General Session 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. This activity will be undertaken by the EFB Subcommittee. Regular teleconferences will be held between face to face meetings to maintain progress.

Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
ARINC Specification 8xx	5	2x1(w/EFBUF) 3x3 (dedicated EFB SC) 11 total days	Oct 2017	April 2019

Please note the number of meetings, the number of meeting days, and the frequency of web conferences to be supported by the IA Staff.

6.0 Comments

None.

6.1 Expiration Date for the APIM

May 2019

Completed forms should be submitted to the AEEC Executive Secretary.