

AEEC Project Initiation/Modification (APIM)

- 1.0 Name of Proposed Project** **APIM: 11-009**
EFB Terminal Interface using Ethernet and Remote Frame Buffer (RFB) Protocol
- 1.1 Name of Originator and/or Organization**
Lufthansa Airlines and IMS Flight Deck
- 2.0 Subcommittee Assignment and Project Support**
Electronic Flight Bag (EFB) Subcommittee
- 2.1 Suggested AEEC Group and Chairman**
Lufthansa presented a proposal to use Ethernet and Remote Frame Buffer Protocol for defining the interface between an EFB processor and EFB and terminal. This proposal was supported by the EFB Subcommittee at their meeting held in Montreal (April 2011).
- 2.2 Support for the activity (as verified)**
Airlines: American, Austrian, Continental, Delta, Lufthansa, Southwest, TAP Portugal, UPS
Airframe Manufacturers: [TBD]
Suppliers: Lufthansa Systems, IMS Flight Deck, EAE Electronics, L2, Jeppesen
- 2.3 Commitment for Drafting and Meeting Participation (as verified)**
Airlines: American, Austrian, Lufthansa, Southwest
Airframe Manufacturers: [TBD]
Suppliers: IMS Flight Deck, EAE Electronics, Jeppesen
Others:
- 2.4 Recommended Coordination with other groups**
ARINC 834: *Aircraft Data Interface Function (ADIF)*
ARINC 840: *Electronic Flight Bag (EFB) Application Control Interface (ACI)*
ARINC 664: *Aircraft Data Network*
- 3.0 Project Scope**
- 3.1 Description**
ARINC Specification 828 defines EFB interfaces including the necessary interfaces between an EFB Processing Unit (PU) and an EFB terminal (usually a display and pilot input devices). These interfaces presently include power and signal interfaces. Keyboard and touch screen data use USB. Digital video may be LVDS and DVI. These ARINC 828 interfaces have limited cable length, may require complex cabling and do not ensure a standard PU to EFB terminal interface among suppliers.

This APIM proposes the application of proven Ethernet technology and Remote Frame Buffer (RFB) protocol. There are EFBs on the market that make use of this protocol. Therefore, it is suggested that RFB be standardized for use on aircraft with EFB installations.

Development of the standard is proposed in two Phases:

Phase 1: Define the RFB protocol for a connection to an EFB terminal.

- Select and define the RFB protocol reusing existing software standards
- Describe use and connectivity cases
- Define which existing ARINC 828 connector quadrx inserts can be used for PU to EFB terminal attachment.

Goal: Standardize the use of RFB using existing connectors. This largely software phase could be a new part to ARINC 664 or an addition to ARINC 828.

Phase 2: Standardize a new EFB terminal connector

- Define a low pin count connector for new installations that exclusively connect to an EFB terminal using Ethernet RFB protocol.

Goal: Standardize a connector and cable that lowers weight and cost.

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

Modification/retrofit requirement: yes no

Specify: (aircraft & date)

Not a requirement, but can be utilized for EFB retrofit programs in all aircraft classes: RJ, single aisle and multi aisle.

Needed for airframe manufacturer or airline project: yes no

The maturity date may be driven by specific aircraft programs, but there is no commitment yet. In any case, it is an airline infrastructure strategic requirement. Airframe manufacturers should consider adopting the emerging standard not only for future aircraft, but also for aircraft under development and in production.

Is the infrastructure standard for the aircraft defined? yes no

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

The RFB protocol will be defined as an appendix to ARINC Specification 828 (Phase 1). The connector will be also be defined in ARINC Specification 828 (Phase 2).

When is the ARINC Standard required?

In eighteen months, with Phase 1 completed by mid-2012 and Phase 2 to follow in 2013.

- Airframe manufacturers can offer integrated EFB terminal which can be connected to any EFB PU running an RFB client.
- A smaller connector eases the installation of a terminal and simplifies cockpit design.

4.2.3 Benefits for Avionics Equipment Suppliers

- Increased market volume realized through lower EFB prices to airlines.
- A smaller connector and cable bundle eases the installation of an EFB terminal and simplifies cockpit retro-fit.
- Allows for an open market place for manufacturers to supply interoperable equipment. Suppliers will develop products in their strength area: PU or EFB terminal.
- Standard interface allows one PU design to interoperate with many EFB terminal sizes and resolutions thus supporting many aircraft types and installations.
- Using a standardized protocol allows easier integration of the customer’s EFB platform.

5.0 Documents to be Produced and Date of Expected Result

Phase 1: Develop RFB protocol in Supplement 3 to ARINC 828

Phase 2: Specify EFB terminal connector in Supplement 3 to ARINC 828

5.1 Meetings and Expected Document Completion

The following table identifies the number of meetings and proposed meeting days needed to produce Supplement 3 as described above.

Product/Activity	Mtgs	Mtg-Days (Total)	Expected Start Date	Expected Completion Date
Phase 1	2	4 mtg days	10/2011	-----
Phase 1&2	1	2 mtg days	-----	7/2012 (phase 1)
Phase 2	1	2 mtg days	7/2012	3/2013

6.0 Comments

None

6.1 Expiration Date for this APIM

April 2013