

## ARINC IA Project Initiation/Modification (APIM)

### 1. Name of Proposed Project

Aircraft - EFB Interface

APIM #: 07-001

yes  no

**Note: This is a draft APIM. It was reviewed January 17th 2007 and discussed by SAI during the February 12th telecon, before submission to AEEC for discussion in April 2007.**

### 2. Suggested Subcommittee Assignment (who acts)

#### 2.1 Identify AEEC group

Starting with an exploratory meeting which took place January 17th/18th 2007, AEEC will decide about the group at a later date.

#### 2.2. Support for the activity

Airlines: Lufthansa, FedEx, Austrian Airlines, Scandinavian Airlines, Air Canada, Air France, United, KLM, Virgin, American

Airframers: Airbus, Boeing

EFB hardware suppliers: Astronautics, Flight Deck Resources, Teledyne

EFB system integrators: ECS, Teledyne, Lufthansa Systems, RockwellCollins, Honeywell

#### 2.3. Commitment for resources (directly from participant)

Chairman: (just in case Lufthansa stands by, but other chairmen welcome)

Airlines: Air France, Lufthansa, FedEx, Virgin, KLM

Airframers: Airbus, Boeing

EFB hardware suppliers: Astronautics, Flight Deck Resources, Teledyne

EFB system integrators: ECS, Teledyne, Lufthansa Systems, RockwellCollins, Honeywell

#### 2.4. Recommended Coordination with other groups

The following activities are relevant to this topic:

- NIS (ADN + SEC)
- AOC (633)
- ANFS (763, 821, 822)

The progress and direction of this activity should be reported to ...

**SAI**

### 3. Project Scope

#### 3.1 Description

This project will develop, as a minimum, the description of a standardized interface between a cabin or cockpit Electronic Flight Bag (=EFB, for definition of EFB, see JAR TGL 36 or FAA AC120-76A), or its processing unit (=EFB-CPU) and the aircraft. The EFB is seen as part of the Airline Information Service Domain as defined in ARINC 811. The interface description should include the physical, electrical and logical specifications needed to interconnect a compliant EFB with a compliant aircraft in order to fulfill the following requirements:

##### Phase 1: The EFB or EFB-CPU ...

- is supplied with electrical power from aircraft power busses,
- can use an installed EFB terminal (e.g. EFB display, function keys, keyboard, touchpad, mounted USB ports),
- has connector provisions to achieve the goals listed in phase 2

Goal: A document describing the connector MIL spec or part number.

##### Phase 2: The EFB or EFB-CPU has additionally ...

- access to "avionics data"
- access to installed air-/ground networks
- access to the aircraft network

##### Phase 3: Aircraft Interface Device (AID)

- As an option, an abstraction layer called AID (Aircraft Interface Device) to be defined in this phase. Such a device could be part of an EFB Class 2 mounting device and would simplify especially the connection of COTS laptops even more.

Goal: A document that, in addition of what has been achieved in phase 1 and what is listed above, includes space and mounting provisions (e.g. attach points) for EFB mounting devices.

It should be noted that the standardization of the EFB itself is not part of this project.

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

New aircraft developments planned to use this specification      yes  no

Airbus:    A350 and future programs

Boeing:    consider using on future programs, e.g. B737 family next generation

Others:    to be determined





## 4.2 Specific project benefits

This document is needed because the airlines need the ability to equip a single EFB system across fleets. Without a standardized connector, the EFB terminal infrastructure (display, keyboard, touchpad), which will be basic equipment in new aircraft models, can only be used together with the airframer supplied EFB-CPU.

A properly executed effort will allow the industry to define EFB systems that can either replace or complement airframer provided EFBs or be used in addition with airframer provided EFBs.

## 4.3 Project Benefit for Airlines

- Increased flexibility in supplier selection (hardware, system integration and update services)
- Increased flexibility in implementing EFB processes that fit exactly their way of operation (no mandatory airframer defined EFB update processes)
- Speedier installation of EFB
- Cost reduction due to single EFB processes across fleets
- Easier to certify (e.g. due to segregation of wiring) and to get operational approval due to the larger market
- Enable airline to select one EFB from many available on the market to suit their needs, leading to exchangeable across fleets, and reduction of spare parts.

## 4.4 Project Benefit for Airframe Manufacturers

- Airframe Manufacturers will benefit from being able to offer new aircraft models with EFB provisions, that will fit the needs of all of their customers
- Airframe Manufacturers can continue to offer Class 1, 2 or 3 EFBs and in addition point out to their customers that there is an easy upgrade / downgrade path between the classes.
- Airframe Manufacturers can rely on EFB equipment suppliers and choose not to develop EFBs themselves. Thanks to the standardized connector, it will ease EFB installation.
- To reuse already installed EFB-HMI (Display, Control Device) simplifies cockpit design

## 4.5 Project Benefit for EFB Equipment Suppliers

- Allows for an open market place for manufacturers to supply interoperable equipment
- By standardizing the connector and the protocols, the effort to equip different aircraft models is reduced
- Easier to certify due to the standardized nature of the connector.

## 5. Documents to be Produced and Date of Expected Result

*ARINC Specification for the Aircraft - EFB Interface* *End of 2007*

*ARINC Specification for the Aircraft - EFB Interface Supplement 1 - End of 2008*

## 6. Meetings/Expected Document Completion

*After completion, the standard could immediately be used for existing and new aircraft models. It is envisioned that a mature draft featuring phase 1 functionality could be completed by July 2007 and considered for adoption at the 2007 AEEC General Session. Work for phase 2 could start afterwards.*

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 2007</b>	<b>Mtg-Days 2008</b>
<i>Initial work assignments (Jan 17th/18th 2007)</i>	1	2	
<i>Work Progress Phase1</i>	2	6	
<i>Work Progress Phase 2</i>	4	3	9

*In addition, it is proposed to support the meetings with WebEx supported teleconferences following a fixed monthly schedule.*

## 7. Comments

*The A380 comes with a Network Server System (NSS) that hosts an EFB called Onboard Information System. This EFB is split into multiple domains:*

- a) The so called Airframer domain which has high security, a tight connection to the avionics and which can exclusively communicate via ACARS and*
- b) the Flight Ops domain, which will be able to communicate with broadband IP networks.*
- c) the Cabin domain, which will also be able to communicate with broadband IP networks*

*The project paper will be too late to influence A380 Entry Into Service NSS configuration. But as some A380 customers plan to replace the Airbus supplied Flight Ops domain laptops by airline EFB-CPUs anyhow, the new ARINC standard could be used to describe the interface between the EFB-CPUs and the rest of the Flight Ops domain for these customers.*

*The B787 comes with two Electronic Flight Bag Electronic Units (EFB-EU) connected to the Core Network Cabinet via an IDN switch. The project paper may be used to describe the interface between the EFB-EU and the IDN switch or it could be used to define an additional interface between the Core Network Cabinet and airline supplied EFB-CPUs. If it is too late to influence the B787 Entry Into Service configuration, it could still be used as basis of an Airline Change Request.*

*On the B747-8 a Network File Server is basic, the Class 3 EFBs are currently an option. The project paper could be used to describe the interface between either*

*one or another LRU and a third party or airliner supplied EFB.*

*The A350 EFB and NSS definitions are presently not finalized. The project paper could be used to describe the interface between the A350 EFB-CPU's and the rest of the A350 NSS.*

For IA Staff use only:

Date Received:

IA Staff Assigned:

Potential impact:

*(Safety, Regulatory, New aircraft/system, Other)*

Forwarded to *(AEEC, AMC, FSEMC)*:

Date Forwarded:

Resolution:

Date of Resolution:

*(Withdrawn, Authorized, Deferred, More detail needed, Rejected)*