ARINC Project Initiation/Modification (APIM)

# Name of Proposed ProjectAPIM #: \_\_\_\_\_\_\_\_\_\_\_

eEnabled Aircraft Ground Systems

## Name of Originator and/or Organization

Maurice Ingle, American Airlines

# Subcommittee Assignment and Project Support

## Suggested AEEC Group and Chairman

SDL/FLS Subcommittees, Co-chairs Ted Patmore and Rod Gates

## Support for the activity (as verified)

Airlines: American Airlines, Cathay Pacific, Delta Air Lines, El Al Israel Airlines, Lufthansa, WestJet, Qatar Airways, TAP Portugal, United Airlines, UPS

Airframe Manufacturers:

Suppliers: Esterline, Honeywell, Rockwell Collins, Teledyne

Others:

## Commitment for Drafting and Meeting Participation (as verified)

Airlines: American Airlines, Delta Airlines

Airframe Manufacturers:

Suppliers: Teledyne

Others:

## Recommended Coordination with other groups

RTCA SC-216, EASA WG-72 and NIS Subcommittee

# Project Scope (why and when standard is needed)

## Description

eEnabled or eOperations Ground Systems are designed by aircraft manufacturers to function with their aircraft only and are required to be used by airlines to electronically manage and distribute field loadable software (FLS), and retrieve aircraft data. The FLS distributions can be accomplished wirelessly to the aircraft, or via wired ground systems, USB media and maintenance laptops. The public key infrastructure (PKI) is an important aspect to these systems.

The goal is to standardize the ground systems such that an airline or operator could use one ground system for any manufacturer’s aircraft. This includes staging FLS to the aircraft wirelessly or in a wired or media-based fashion.

This could come in the form of a single standard that consolidates the aircraft manufacturer’s FLS distribution system functionality.

Having a hosted solution that supports this standard is also desired. Some airlines and operators do not have or want the capability to host the IT infrastructure required to support eEnabled aircraft.

FLS distribution to the aircraft involves these primary functions:

* FLS are made available by the aircraft manufacturers, suppliers and the airline itself to be received, verified, digitally signed and stored in a ground FLS storage system by the operator.
* Distributions from the ground FLS storage system to the aircraft are accomplished using the aircraft manufacturer-developed ground applications via wireless, wired or media-based processes, and applied PKI.

Downloading data from the aircraft is also a function related to eEnabled ground system transport and storage, whether wireless, media based or wired for the following data:

* Aircraft system reports
* Flight Ops Quality Assurance data
* Security log data
* FLS configuration data

## 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: (aircraft & date)

 Boeing: (aircraft & date)

 Other: (manufacturer, aircraft & date)

Modification/retrofit requirement yes [x]  no [ ]

 Specify: Desired

Needed for airframe manufacturer or airline project yes [x]  no [ ]

 Specify: Desired

Mandate/regulatory requirement yes [ ]  no [x]

 Program and date: (program & date)

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

 Specify (e.g., ARINC 429)

When is the ARINC standard required? March 2019

What is driving this date? Time necessary to define, prepare and alter systems

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

 If NO please specify solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Are Patent(s) involved? yes [ ]  no [x]

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

## Issues to be worked

The ground system applications must support the following:

A secure means of validating that FLS has been provided from a trusted source and the FLS integrity has not been compromised.

The ability to digitally sign the FLS with the airline or operator digital signature (as required).

Storage of the FLS.

Distribution of the FLS wirelessly to aircraft and/or via ground systems like proxy servers, USB sticks or maintenance laptops.

PKI infrastructure as required by the ground and aircraft systems.

A repository for aircraft data.

# Benefits

## Basic benefits

Operational enhancements yes [x]  no [ ]

For equipment standards:

* + - * 1. Is this a hardware characteristic? yes [ ]  no [x]
				2. Is this a software characteristic? yes [x]  no [ ]
				3. Interchangeable interface definition? yes [ ]  no [x]
				4. Interchangeable function definition? yes [x]  no [ ]

 If not fully interchangeable, please explain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is this a software interface and protocol standard? yes [x]  no [ ]

 Specify: All of the above is as it relates to ground systems and interface with aircraft

Product offered by more than one supplier yes [x]  no [ ]

 Identify: Boeing and Airbus

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

### Benefits for Airlines

Large initial acquisition and build, and ongoing maintenance cost savings for airlines that operate or plan to operate any aircraft manufacturer’s “eEnabled” aircraft will be realized from commercial product and licensing costs, hosting fees, IT infrastructure costs, and Engineering, IT, and IT Security resources.

Also, operators desire to have one process to perform eEnabled FLS management. This will minimize problems due to human factors caused by the complexity of using multiple systems for one type of task.

Regulatory requirements will also be simplified with the standardization of ground applications, infrastructure and processes.

### Benefits for Airframe Manufacturers

Simplification with one industry standard

### Benefits for Avionics Equipment Suppliers

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

# Documents to be Produced and Date of Expected Result

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

## 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 Specification face to face | 5 | 15 | 01/2017 | 03/2019 |
| ARINC Specification web meetings (half days) | 6 | 3 | 02/2017 | 03/2019 |
|  |  |  |  |  |
|  |  |  |  |  |

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

# Comments

Airbus and Boeing will have to support this standardization if it is to be accomplished. Currently, no other aircraft manufacturers are known to have built these types of ground systems. IT and IT Security involvement will be instrumental.

## Expiration Date for the APIM

April 2019

***Completed forms should be submitted to the AEEC Executive Secretary.***