



GUIDANCE FOR THE MANAGEMENT OF FIELD LOADABLE SOFTWARE

ARINC REPORT 667-2

PUBLISHED: July 6, 2017

Prepared by the AMC
Published by
SAE ITC
16701 Melford Blvd., Suite 120, Bowie, Maryland 20715 USA



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| | | |
|---|-----------------|-------------------|
| Prepared by the Avionics Maintenance Conference (AMC) | | |
| Adopted by the AMC Steering Group | | |
| Report 667 | Adoption Date | Published Date |
| | April 8, 2002 | May 17, 2002 |
| Supplements to this ARINC Standard | | |
| Report 667-1 | October 6, 2010 | November 12, 2010 |
| Report 667-2 | May 1, 2017 | July 6, 2017 |

A summary of the changes introduced by each supplement is included at the end of this document.

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FOREWORD

The AMC, SAE ITC, and ARINC Standards

ARINC Industry Activities, an SAE ITC program, organizes aviation industry committees and participates in related industry activities that benefit aviation at large by providing technical leadership and guidance. These activities directly support aviation industry goals: promote safety, efficiency, regularity, and cost-effectiveness in aircraft operations.

ARINC Industry Activities organizes and provides the secretariat for international aviation organizations (AEEC, AMC, FSEMC) which coordinate the work of aviation industry technical professionals and lead the development of technical standards for airborne electronic equipment, aircraft maintenance equipment and practices, and flight simulator equipment used in commercial, military, and business aviation. The AEEC, AMC, and FSEMC develop consensus-based, voluntary standards that are published by SAE ITC and are known as ARINC Standards. The use of ARINC Standards results in substantial technical and economic benefit to the aviation industry.

There are three classes of ARINC Standards:

- a) ARINC Characteristics – Define the form, fit, function, and interfaces of avionics and other airline electronic equipment. ARINC Characteristics indicate to prospective manufacturers of airline electronic equipment the considered and coordinated opinion of the airline technical community concerning the requisites of new equipment including standardized physical and electrical characteristics to foster interchangeability and competition.
- b) ARINC Specifications – Are principally used to define either the physical packaging or mounting of avionics equipment, data communication standards, or a high-level computer language.
- c) ARINC Reports – Provide guidelines or general information found by the airlines to be good practices, often related to avionics maintenance and support.

The release of an ARINC Standard does not obligate any organization to purchase equipment so described, nor does it establish or indicate recognition or the existence of an operational requirement for such equipment, nor does it constitute endorsement of any manufacturer's product designed or built to meet the ARINC Standard.

In order to facilitate the continuous product improvement of this ARINC Standard, two items are included in the back of this document:

An Errata Report solicits any corrections to existing text or diagrams that may be included in a future Supplement to this ARINC Standard.

An ARINC IA Project Initiation/Modification (APIM) form solicits any proposals for the addition of technical material to this ARINC Standard.

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1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 Purpose and Goal

The purpose of ARINC 667 is to provide guidance for the in-service management of Aircraft Controlled Software, which is also called Field Loadable Software (FLS) or Loadable Software Parts. All of these terms are considered equivalent. The following is the evolution of these loadable software terms:

- First, the term Field Loadable Software (FLS) implied all aircraft software that is loadable on the aircraft or in the shop. It focused on loadable characteristic of the software.
- Second, the term Loadable Software Part (LSP) also implies all aircraft software that is loadable on the aircraft or in the shop. However, it focuses on describing the software being an aircraft part and secondarily on the fact that it is loadable.
- Currently, a more precise term is Aircraft Controlled Software (ACS), which describes how aircraft software is controlled regardless of how the software is loaded.

ARINC Report 667 generally uses the term ACS to describe the software in the scope of this document. The term FLS is used sparingly.

Modern airplanes contain two distinct types of software: Aircraft Controlled Software (ACS) and Hardware Controlled Software (HCS). ACS are independent airplane parts that must be managed separately from the hardware. The management of HCS is not discussed in the document since existing hardware management processes can be applied to HCS. Further definition of airborne software types is contained in Section 2.0. Refer to **ARINC Report 849: Data Loading Specifications for Aircraft Components** for more information about HCS.

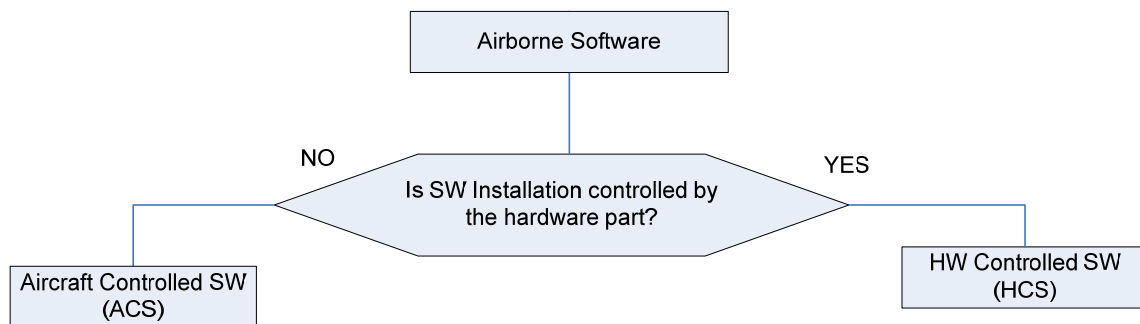


Figure 1-1 – Airborne Loadable Software

This document is intended to be broad and apply to all Aircraft Controlled Software (ACS). The key features of Aircraft Controlled Software are as follows:

- a. Usually capable of software loading on-aircraft and off aircraft.
- b. Software part number is electronically verifiable on-aircraft.
- c. Modification does not change target hardware part number.
- d. The software has its own unique identification/part number.
- e. The software part may be a type-certified aircraft part.
- f. The software may be an application.

1.0 INTRODUCTION

- g. The software may be a database.

COMMENTARY

The term target hardware refers to the unit or system that is intended to host the software. The terms Line Replaceable Unit (LRU) and Line Replaceable Module (LRM) are used sparingly in this document, as they are both considered target hardware.

1.2 Vision

The following sections describe the vision, scope, and background leading the preparation of this document.

As a basic premise, airlines desire processes and guidelines that will assure that the correct ACS is loaded into the target hardware on every aircraft or training device at all times. These guidelines are prepared for the airlines, airframe manufacturer, hardware, and software providers. Airlines want to ensure that handling of ACS in the parts supply chain is efficient, cost effective, and appropriate.

COMMENTARY

The term “airline” is used throughout the document to include the aircraft operators and anyone else that operates on their behalf, e.g., Maintenance, Repair, and Overhaul (MRO) Service providers and other airline designees such as training providers or training device manufacturers.

1.2.1 Scope

This document provides guidance to users of ACS for the development of methods to control and manage ACS. Ideas contained within this document were developed from past experiences and future expectations based on the business situations and maintenance actions of contributing aircraft manufacturers, airlines, Original Equipment Manufacturers (OEM), vendors, and software suppliers.

This document defines Aircraft Support Data (ASD) in Section 2.0. ARINC 667 does not define management processes for ASD. Guidance for management of ASD is contained in **ARINC Report 675: *Guidance for the Management of Aircraft Support Data Management***.

As aircraft and their components become more reliant upon software to operate, it is imperative that actions must be taken to maintain control and management of aircraft software. Different OEM installations, multiple vendor/supplier interfacing units, and varying operator requirements for data upload and retrieval have proven to be difficult integrations of the in-field software control. It is the clear intention of this document to provide a means to encourage good software configuration control and management practices.

The following diagram depicts the major processes described by this report.