FSEMC Developed ARINC Standards

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ARINC Industry Activities organizes three committees that develop standards for the air transport community:

AEEC   Airlines Electrical and Electronic Committee
AMC   Avionics Maintenance Conference
FSEMC   Flight Simulator Engineering and Maintenance Conference

FSEMC has taken a lead in the development of many industry standards in the areas of flight simulator training, simulator metrics, cabin training devices, simulator software, and visual databases.

Persons wishing to order the standards listed below may do so by contacting the ARINC Standards Document Section at +1 240 334-2578, standards@sae-itc.org, or via the ARINC Store .

FSEMC Standards

ARINC Report 432-1: *Training Requirements for Flight Training Equipment Support Personnel.* This standard is a guide for flight training equipment operators and manufacturers to define the scope and content of support personnel training courses.

ARINC Report 433-2: *Standard Measurements for Flight Simulator Quality.* This standard is a guide to assess Synthetic Training Device (STD) quality and performance by STD operators, manufacturers, regulatory authorities and users.

ARINC Report 434-1: *Synthetic Training Device (STD) – Life Cycle Support.*

Supplement 1 is a complete rework of ARINC Report 434. The previous material has been retained and new material on life cycle support has been added. This included guidelines and standards that will lead to high Reliability (MTBR) and improve Maintainability (MTTR). Some of the issues defined are:

- Define reliability and how to quantitatively measure reliability in a simulator.

- Define maintainability and how to quantitatively measure maintainability in a simulator.

ARINC Report 435: *Guidelines for Cabin Training Devices.* This report sets forth guidance for the design, development, and installation of Cabin Training Devices. It includes operational and handling characteristics for establishing minimum data required for reliability and maintainability.

ARINC Report 436-1: *Guidelines for Electronic Qualification Test Guide* provides Flight Simulation Training Device (FSTD) users, suppliers and regulatory authorities a set of guidelines for Electronic Qualification Test Guide (eQTG) systems. This document is intended to be supplementary to existing regulatory authority requirements. This document is not designed to direct the use of certain technologies or platforms, but to outline the minimum requirements of an eQTG system. The choice of the technology used to meet these requirements is left to the system's designers and users. Supplement 1 revised several of the references in the standard.

ARINC Report 437-1: *Training Device Facility Considerations* provides guidelines, including cost analysis considerations, to aid in the planning of a new training facility or expanding current existing facilities.

This document is intended to aid you when planning a new training facility, or adding new equipment bay(s), which in the future should be able to host any type of training device. This may also lead the vendors to standardize some of their equipment to ease installation.

ARINC Report 438: *Guidance for Acceptance of Flight Simulation Training Devices* provides guidance to the flight simulation industry for the acceptance of a Flight Simulation Training Device (FSTD). It may also be used during Request for Proposal (RFP) and contract discussions for an FSTD purchase to define the requirements for acceptance of the device. It is intended to be usable for all FSTD devices - types, repeat, prototype, updated, new, and used - and for different levels of qualification being sought.

ARINC Report 439: *Guidance for Simulated Air Traffic Control Environments in Flight Simulation Training Devices* provides guidance on provision of a Simulated Air Traffic Control Environment (SATCE) in Flight Simulation Training Devices (FSTDs) for the benefit of flight crew training. This guidance recommends a more mature set of requirements, and provides commentary on system scope, currently available technologies, integration, qualification, and maintenance.

ARINC Report 440: *Guidelines for the Provisioning and Support of Training Equipment Data* provides guidelines for the aviation industry to ensure that data and solutions for training are adequately provided in content and schedule, are cost effective, and are completely supported throughout the life of the equipment. It should be used at all appropriate levels within a company (e.g., Purchasing, Operations, Training) when purchasing or developing new aircraft, major aircraft modifications or training systems.

ARINC Report 441: *Guidelines for the Supply of Binary Format Software for Training Purposes* states there are many methods of providing data for use in simulation–Chart Driven Models (CDM), source code, binary code and printed format. This report deals with data provided in the form of binary format software that will be used for the generation, maintenance and update of training devices.

This report sets forth the general philosophy and basic guidance for designing, generating, and supplying this data for training purposes. It is expected that this report will promote mutual understanding for the use of binary format software in training devices.

This document is intended to help with the supply, integration, and support of this type of data and to lay out requirements for suppliers. This document does not apply to the provision of portable electronic data which is covered in ARINC Report 442.

ARINC Report 442: *Guidelines for the Supply of Chart Driven Models/Source Code for Training Purposes* states there are many methods of providing data for use in simulation - Chart Driven Models (CDM), source code, binary code and printed format. This report deals with data provided in the form of chart driven models and/or source code that will be used for the generation, maintenance and update of training devices.

This report sets forth the general philosophy and basic guidance for designing, generating, and supplying this data for training purposes. It is expected that this report will promote mutual understanding among those parties concerned with the use of this data in training devices.

Aircraft and equipment manufacturers may provide data in this form to take advantage of chart driven models and/or source code generated during aircraft or component development.

This document is intended to help with the supply, integration, and support of this type of data and to lay out requirements for suppliers. This document does not apply to the provision of binary format software which is covered in ARINC Report 441 or other formats covered by the IATA: Flight Simulator Design and Performance Data Requirements.

ARINC Report 443: *Data Collection for Visual Databases* provides guidance to visual database developers in the flight simulation training device industry. This report describes the critical elements required to design airfield databases, as well as their uses in a simulated training environment to ensure compliance with regulatory requirements. It illustrates to airfield authorities the need for timely, accurate information regarding actual or planned changes to the physical airfield.

ARINC Report 444: *Overview of Export Control Issues for Flight Training Devices* provides a high-level overview of export control regulations, considerations, and scenario examples to flight simulator manufacturers, equipment suppliers, and operators.

ARINC Report 445: *Guidance for Configuration and Control of Loadable Software Parts in Flight Simulation Training Devices* defines the types of software used in FSTDs, outlines the configuration control that is required to maintain the devices, and provides guidance on software updates and changes.

ARINC Report 610C: *Guidance for Design of Aircraft Equipment and Software for Use in Training Devices* developed a solution for training device efficiency and quality that defines the functions that are required to allow aircraft equipment to be used efficiently in a training environment and gives examples from users' experiences to help the equipment supplier evaluate the impact of these requirements on a given piece of equipment. By designing these functions and capabilities into the equipment (hardware and software) with training devices in mind this report also considers implementation strategies to minimize the cost and risk of compliance with ARINC Report 610 in aircraft equipment.

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To be recognized as the international authority on the Aviation Training Device industry. To enhance the safety and operational efficiency of aviation worldwide through the dissemination of engineering, maintenance, and associated technical information, including the development of consensus standards. To promote and advance the state of the art of the Aviation Training Device industry.