

RTCA, Inc.
1150 18th Street, NW, Suite 910
Washington D.C. 20036

Airworthiness Security Methods and Considerations

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Prepared by: SC-216
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Copies of this document may be obtained from:

RTCA, Inc.
1150 18th Street, N.W., Suite 910
Washington, DC 20036

Telephone: 202-833-9339
Facsimile: 202-833-9434
Internet: www.rtca.org

Please call RTCA for price and ordering information.

FOREWORD

This document was prepared by Special Committee 216 (SC-216) and was approved by the RTCA Program Management Committee (PMC) on September 23, 2014.

RTCA, Incorporated is a not-for-profit corporation formed to advance the art and science of aviation and aviation electronic systems for the benefit of the public. The organization functions as a Federal Advisory Committee and develops consensus-based recommendations on contemporary aviation issues. RTCA's objectives include but are not limited to:

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- analyzing and recommending solutions to the system technical issues that aviation faces as it continues to pursue increased safety, system capacity and efficiency;
- developing consensus on the application of pertinent technology to fulfill user and provider requirements, including development of minimum operational performance standards for electronic systems and equipment that support aviation; and
- assisting in developing the appropriate technical material for which positions for the International Civil Aviation Organization and the International Telecommunications Union and other appropriate international organizations can be based.

The organization's recommendations are often used as the basis for government and private sector decisions as well as the foundation for many Federal Aviation Administration Technical Standard Orders.

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EXECUTIVE SUMMARY

This document is the product of the RTCA Special Committee SC216, titled “Aeronautical Systems Security” to provide additional guidance for applicants implementing an Airworthiness Security Process. It was developed in the context of DO-326A/ED-202A "Airworthiness Security Process Specification" which addresses type certification considerations during the first three life cycle stages of an aircraft type (Initiation, Development or Acquisition, and Implementation) and DO-355/ED-204, "Information Security Guidance for Continuing Airworthiness" which addresses airworthiness security for continued airworthiness.

The methods and considerations of this document address the assessment of the acceptability of the airworthiness security risk and the design and verification of the airworthiness security attributes related to system safety and airworthiness. Other aspects of information security for aerospace systems that do not affect the airworthiness security of the type design are excluded. Recommendations for handling those aspects can be found in other guidance.

More specifically, this guidance addresses the following areas.

- It provides guidance for accomplishing the activities identified in DO-326A in the areas of Security Risk Assessment and Effectiveness Assurance.
- It provides specific methods for Security Risk Analysis and Network Security Domains.

It is intended to be used in conjunction with other applicable guidance material, including SAE ARP 4754A/ED-79A, SAE ARP 4761/ED-135, DO-178C/ED-12C, and DO-254/ED-80 and with the advisory material associated with FAA AC 25.1309-1A and EASA AMC 25.309, in the context of part 25 for Transport Category Airplanes which include an approved passenger seating configuration of more than 19 passenger seats. This guidance is not intended for CFR parts 23, 27, 29, 33.28, and 35.15, normal, utility, acrobatic, and commuter category airplanes, normal category rotorcraft, transport category rotorcraft, engines, and propellers.

This document does not address:

- a. Physical security or physical attacks on the aircraft (or ground element),
- b. Airport, Airline or Air Traffic Service Provider security (e.g., access to airplanes, ground control facilities, data centers),
- c. Communication, navigation, and surveillance services managed by national agencies or their international equivalents (e.g., GPS, SBAS, GBAS, ATC communications, ADS-B).

This document describes guidelines, methods and tools used in performing an airworthiness security process. The guidelines, methods and tools presented are not intended to be exhaustive and can be expected to be updated with additional methods and considerations. Applicants and authorities should consider alternative practices if and when they are proposed. Practices for airworthiness security are still undergoing evolution and refinement as new features are deployed and the security threat itself evolves.

RTCA/EUROCAE documents on Aeronautical Systems Security will address information security for the overall Aeronautical Information System Security (AISS) of airborne systems with related ground systems and environment. This guidance material is for equipment manufacturers, aircraft manufacturers, and anyone else who is applying for an initial Type Certificate (TC), and afterwards (e.g. for Design Approval Holders (DAH)), Supplemental Type Certificate (STC), Amended Type Certificate (ATC) or changes to Type Certification for installation and continued airworthiness for aircraft systems, and is derived from understood best practice.

The FAA publishes additional guidance that may be used in combination with this document. Since aircraft electronic security requirements and regulations change, it is highly recommended that applicants contact the applicable certification offices (FAA or International Civil Aviation Authorities) to obtain the most recent guidance on the use of this document for certification projects.

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1 INTRODUCTION

This document is the product of the RTCA Special Committee SC216, titled “Aeronautical Systems Security” to provide additional guidance for applicants implementing an Airworthiness Security Process as specified in DO-326A/ED-202A to address information security for certification of aircraft and their systems.

1.1 Purpose

This document describes guidelines, methods and tools used in performing an airworthiness security process. The guidelines, methods and tools presented are not intended to be exhaustive and can be expected to be updated with additional methods and considerations, including those needed to meet evolving regulatory assumptions. Applicants can propose alternative practices for consideration by the authorities. Practices for airworthiness security are still undergoing evolution and refinement as new features are deployed and the security threat itself evolves.

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1.2 Scope

Airworthiness security is the protection of the airworthiness of an aircraft from intentional unauthorized electronic interference. This includes the consequences of malware and forged data and of access of other systems to aircraft systems.

This guidance provides methods and considerations for securing airworthiness during the aircraft development life cycle from project initiation until the Aircraft Type Certificate is issued for the aircraft type design. It was developed in the context of DO-326A/ED-202A "Airworthiness Security Process Specification" which addresses type certification considerations during the first three life cycle stages of an aircraft type (Initiation, Development or Acquisition, and Implementation) and DO-355/ED-204, "Information Security Guidance for Continuing Airworthiness" which addresses airworthiness security for continued airworthiness.

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