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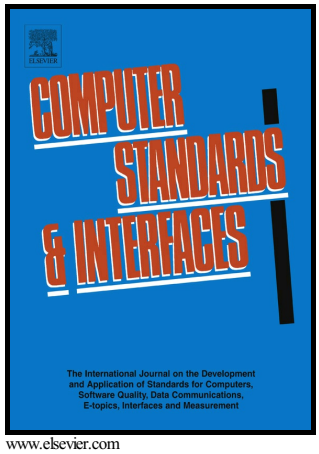

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Checklists for compliance to DO-178C and DO-278A Standards

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Abstract

The growth and complexity of airborne systems requires the elaboration of specific standards for software certification, mainly due to the characteristics of safety and reliability. As a consequence it is also necessary to improve the corresponding verification processes including the techniques that facilitate checking compliance with these required features. The goal of this paper is to analyse and develop a guide to implement the use of checklists as a formal inspection technique in the verification of compliance to all aspects referred by standards DO-178C and DO-278A. We have analysed in detail the normative under study and we have generated a set of checklists with a distributed application along the identified verification processes. These checklists have subsequently been validated from two points of view: one as a part of the usual process and another through the opinion of experts in the field.

Keywords: Checklists, software, objectives, processes, verification, DO-178C, DO-278A

1. Introduction

In December 2011, a new version of standard DO-178C [1] (airborne systems) and DO-278A [2] (not airborne systems) were published. The normative has been used as a basis for software assurance in the development of critical systems (*safety-critical systems*) [3]. These versions of standards introduced changes and improvements over its predecessors [4] [5]. They establish guidelines to be followed during quality assurance of the software implemented in airborne systems and ground equipment. These standards and their supplements specify a set of requirements (as objectives) which every supplier must satisfy as well as the methods to check such compliance.

The consequence of a failure in such embedded software can cause equipment or a system may incorrectly operate; therefore, a software malfunction can directly impact flight safety. The effects can range from negligible effects to consequences that can be catastrophic, causing failures in critical systems which endanger the safe operation of the aircraft: e.g. cases such as

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