

The use of three-dimensional animations in aircraft maintenance documentation

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Abstract

Technical documentation for aircraft maintenance includes black and white two-dimensional graphics. They are a support for the written text of the maintenance procedures. In current practice text is still a main source of information on how to perform a maintenance procedure. It is printed out in the form of a job-card and taken to the aircraft to be maintained. This study on the use of maintenance documentation for the future addresses the use of three-dimensional animations. Interviews were conducted with both experienced maintenance operators and students about their ideas, wishes and mental models concerning three-dimensional animations. The general procedure was to give participants a task (such as the removal of an aircraft system), to show them the (written) procedure in the existing electronic manual, complemented with three-dimensional animations. Questions were asked about how they would use these during task-performance, necessary improvements, and the relation with the text. Outcomes show that although there was a positive attitude to three-dimensional animations, critical questions were also asked. Assessments differed as to the way in which different technicians use the technical manuals. Differences also relate to experience and to tasks. The outcome of the study is discussed and related to the literature on both maintenance practices and the use of three-dimensional animations.

Introduction

In technical documentation for aircraft maintenance, pictures of systems are provided in black and white graphics. They are a support for the written text of the maintenance procedures. In the new generation of electronic documentation it is possible to include interactive three-dimensional animations (3D). However, providing what is technically possible is not necessarily supporting the users. In current practice, text remains the major source of information on how to perform a maintenance procedure. It is printed out in the form of a job-card and brought to the aircraft to be maintained.

Text and 2D images are sources of information that have been used for centuries. In education, children learn to use these from an early age on. In technical education, future technicians learn how to work with texts, images of systems and schematics.

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