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Aerospace series - Architecture for integrated management of a system`s health condition

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Aerospace series - Architecture for integrated management of a system's health condition

Série aérospatiale - Architecture pour la gestion intégrée de l'état de santé d'un système

Luft- und Raumfahrt - Architektur für das integrierte Management eines Systemzustandes

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 9722:2023) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this document: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

An *equipment health card* contains the mandatory deadlines for its maintenance, as well as the history of maintenance technical operations. This chiefly concerns the log book.

A *system health card* contains all the health cards for the equipment of which it is comprised. It is managed, on the one hand based on the information contained in each equipment health card, in order to monitor maintenance scheduling and troubleshooting, and on the other hand based on system configuration at a given time which results from the equipment exchanges caused, for example, by system maintenance.

The system health card for the fleet includes all the health cards for the fleet systems.

Data dematerialization leads to transformation of the business and thus of its internal architecture and its external interactions, particularly through digital platforms. In addition, the numerous data sources and their real-time availability give more and more intrinsic value to each data item; their exploitation enables improved integrated management of the health condition of a system. This integrated management optimizes the existing services (data processing or maintenance services management) or even creates some new ones that will be proposed by the various stakeholders (actors) of the complete ecosystem.

This document provides recommendations about the centralization of the health data for a fleet of systems, such as an aircraft fleet for example, to ensure consistency between stakeholders (operators, repair facilities, designers, etc.) and the management of its health card.

These recommendations are based on a generic support organization proposal backed up by a product architecture for the system and its components.

The recommendations and diagrams in this document are functional and entail no constraints with respect to the organic architecture.

In this document, it is assumed that system health card access and management have a centralized address known to all, accessible to every rights holder, and within a time offered by dematerialization of data. No assumption is made regarding the location of health card data, which can be decentralized in a cloud, for example. In this document, the health card is said to be centralized because the rights holders access it in the same way, at the same address.

Data protection is a major issue, but one that is not dealt with in this document, because it is a more general question which goes beyond the scope of health card management.

The document is structured in the following way:

General reminders on the health card are given in Clause 4. Clause 5 is the heart of this document and gives recommendations about system and product architectures. Clause 6 presents the use of the health card to make fleet maintenance projections. If the reader wishes to explore the subject in greater depth, Clause 7 gives the precautions to be taken when handling data. Finally, the prospects are proposed in Clause 8.

1 Scope

This document is mainly aimed at all the trades which are actively involved in managing the health of a system.

Although it relies on examples of aeronautical systems, the expert group considers that this document is applicable for systems from other areas.

This document specifies the centralization of the health data for a fleet of systems, such as an aircraft fleet for example, to ensure consistency between stakeholders (operators, repair facilities, designers, etc.) and the management of its health card.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13306, *Maintenance — Maintenance terminology*

EN 9721, *Aerospace series — General recommendation for the BIT Architecture in an integrated system*