SLOVENSKI STANDARD
SIST-TP CEN/TR 17602-30-08:2022

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Zagotavljanje kakovosti proizvodov v vesoljski tehniki - Viri podatkov o zanesljivosti komponent in njihova uporaba

Space product assurance - Components reliability data sources and their use

Raumfahrtproduktsicherung - Datenquellen zur Bauteilezuverlässigkeit und ihre Anwendung

Assurance produit des projets spatiaux - Sources de données de fiabilité composants et leur utilisation

Ta slovenski standard je istoveten z: CEN/TR 17602-30-08:2021

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03.120.99	Drugi standardi v zvezi s kakovostjo	Other standards related to quality
49.140	Vesoljski sistemi in operacije	Space systems and operations

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TECHNICAL REPORT

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ICS 49.140

English version

Space product assurance - Components reliability data sources and their use

Assurance produit des projets spatiaux - Sources de
données de fiabilité composants et leur utilisation

Raumfahrtproduktsicherung - Datenquellen zur
Bauteilezuverlässigkeit und ihre Anwendung

This Technical Report was approved by CEN on 22 November 2021. It has been drawn up by the Technical Committee
CEN/CLC/JTC 5.

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CEN/TR 17602-30-08:2021 (E)

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European Foreword

This document (CEN/TR 17602-30-08:2021) has been prepared by Technical Committee CEN/CLC/JTC 5 "Space", the secretariat of which is held by DIN.

It is highlighted that this technical report does not contain any requirement but only collection of data or descriptions and guidelines about how to organize and perform the work in support of EN 16602-30.

This Technical report (CEN/TR 17602-30-08:2021) originates from ECSS-Q-HB-30-08A.

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

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document has been developed to cover specifically space systems and has therefore precedence over any TR covering the same scope but with a wider domain of applicability (e.g.: aerospace).

CEN/TR 17602-30-08:2021 (E)

1
Scope

This handbook identifies data sources and respective methods that can be used for reliability prediction of components. It proposes suitable data sources and an application matrix for component families.

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2
References

EN Reference	Reference in text	Title
EN 16601-00-01	ECSS-S-ST-00-01	ECSS - Glossary of terms
EN 16602-30	ECSS-Q-ST-30	Space product assurance - Dependability
EN 16602-40	ECSS-Q-ST-40	Space product assurance - Safety
EN 16602-60	ECSS-Q-ST-60	Space product assurance - Electrical, electronic and electromechanical (EEE) components
	IEC 60050-191	International Electrotechnical Vocabulary - Chapter 191: Dependability and quality of service

CEN/TR 17602-30-08:2021 (E)

3
Terms, definitions and abbreviated terms

3.1 Terms from other documents

For the purpose of this document, the terms and definitions from ECSS-S-ST-00-01 and IEC 60050-191 apply.

3.2 Abbreviated terms

For the purpose of this document, the abbreviated terms from ECSS-S-ST-00-01 apply.

4
Selection of reliability data and methods

4.1 Introduction

This handbook can be used whenever EEE and mechanical components reliability data or failure rates are needed to perform quantitative dependability or safety analyses in accordance with ECSS-Q-ST-30 or ECSS-Q-ST-40.

The boundaries of this process are shown in Figure 4-1. Inputs are project requirements, handbook data and manufacturer or user data. The selection process should consider selection criteria and methods of use of data. Outputs are usually included in equipment reliability assessments. Selection is supported by suitable justification.
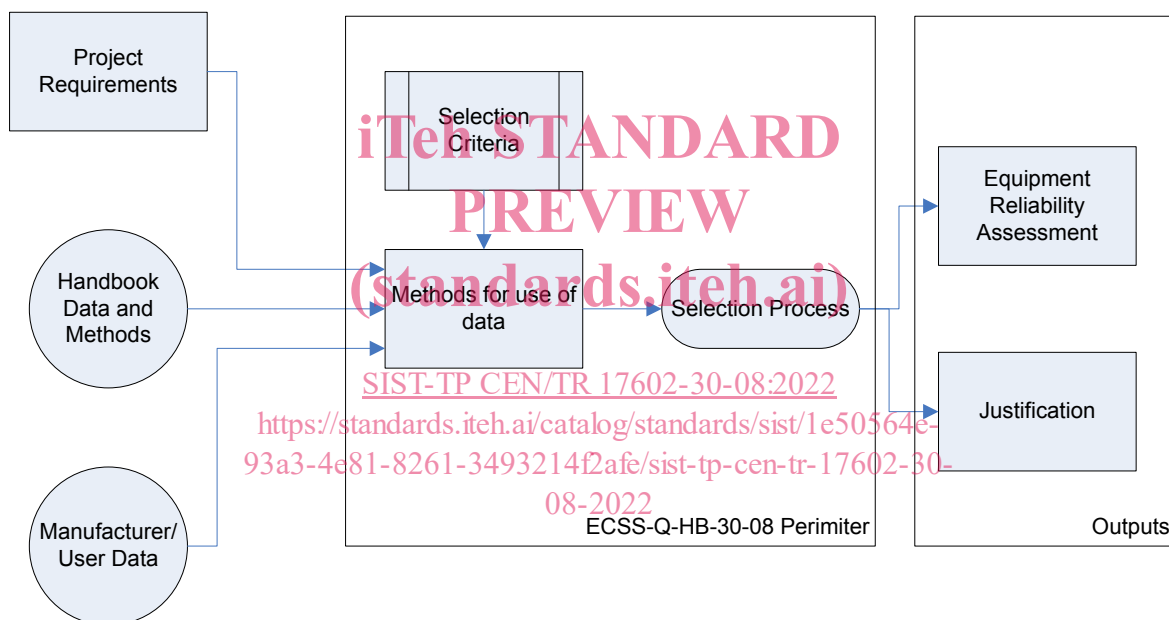

Figure 4-1: Boundaries of ECSS-Q-HB-30-08 (inputs and outputs)

4.2 Selection process

The selection of a suitable methodology is made according to Figure 4-2. Where the customer requires that a reliability prediction be computed according to a particular methodology, contractual requirements are applicable.

The term "methodology" includes the process, data and equations as defined in a particular handbook or prediction system.
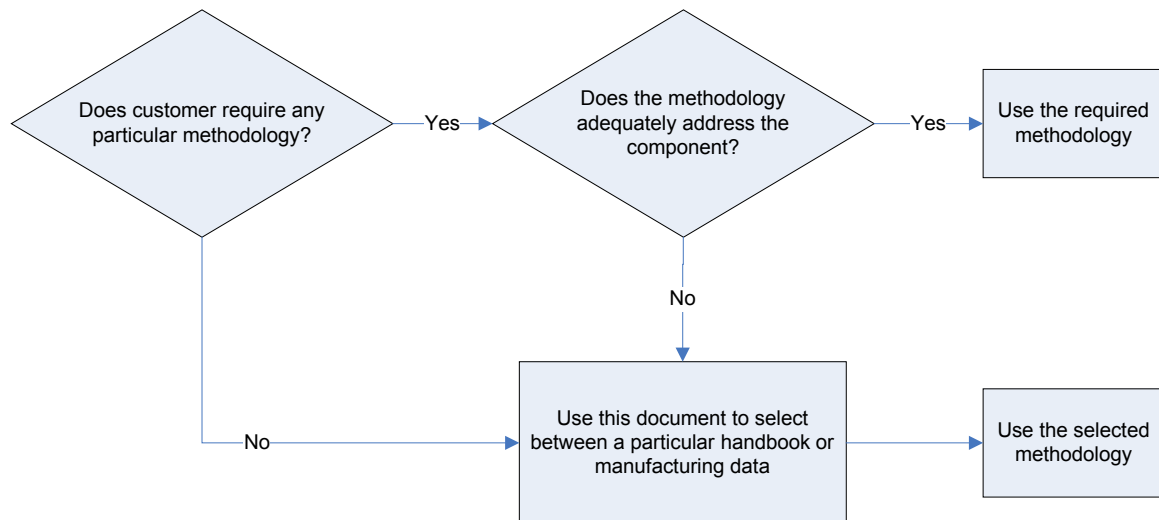
Figure 4-2: Selection process

In the case where there is no prescribed methodology, this handbook should be applied and a suitable methodology should be selected.

In the case where the prescribed methodology does not adequately address the component under consideration, this handbook should be applied and a suitable methodology should be selected.

In order to perform any reliability predictions, reliability data is needed as an input, and a suitable methodology needs to be applied.

Figure 3 shows the decision logic that should be applied when selecting data sources. Data should be obtained from the following sources, in order of preference:

- Handbook data

- Manufacturer or user data.
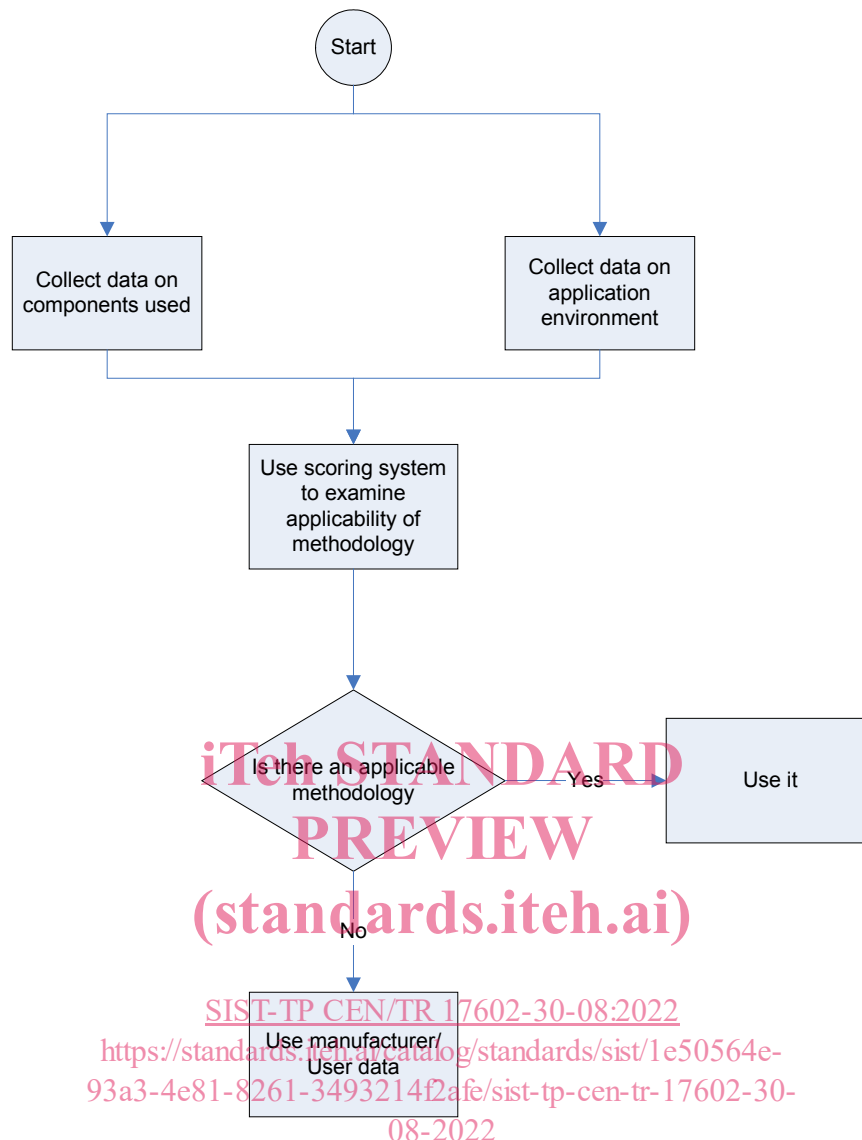
Figure 4-3: Decision logic

A description of data sources is given in clause 4.3.

The choice of a given data source is acceptable if it satisfies the criteria listed in clause 4.4. Data on the handbook methodology, the components, environment and use should be collected. A suitable methodology can be selected by using a weighted score ranking scheme, as described in clause 4.4.1.

The rationale for selection is justified according to clause 4.5.

A suitable methodology or instructions for use is described in clause 4.6.

If a handbook is determined to be not suitable for the component, then manufacturer or user data should be used.