
Vodenje programov - Vodenje konfiguracije - 103. del: Preverjanje konfiguracije, pregledi in revizije

Programme Management - Configuration Management - Part 103: Configuration Verifications, Reviews and Audits

Programm-Management - Konfigurationsmanagement - Teil 103: Überprüfungen, Reviews und Audits der Konfiguration

Management de Programme - Gestion de la Configuration - Partie 103 : Vérifications, revues et audits de la configuration

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Part 103: Configuration Verifications, Reviews and Audits**

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audits de la configuration

Programm-Management - Konfigurationsmanagement
- Teil 103: Überprüfungen, Reviews und Audits der
Konfiguration

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European foreword

This document (EN 9223-103:2018) 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 Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2018, and conflicting national standards shall be withdrawn at the latest by September 2018.

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Introduction

The finality of Configuration Management is to assure during the whole **product** lifecycle¹:

- consistency and commonality of the technical information among all actors;
- **traceability** of this technical information.

For that purpose, Configuration Management organizes and implements the following activities:

- selection of **items** and technical information that shall be submitted to Configuration Management, under clearly established responsibility (**configuration identification**);
- capture, keeping this information and making it available (**configuration status accounting**);
- verification and validation of the coherence of this information at defined steps of the product lifecycle (**configuration verifications, reviews and audits**);
- technical changes and gaps processing in order to keep the consistency of this information (**configuration control**).

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¹ See EN ISO 9000:2015.

1 Scope

The present document:

- is based on internationally-recognized concepts;
- proposes organisational principles and implementation processes for Configuration Management from both viewpoints: “programme” and “company”, with emphasis on the “programme” viewpoint;
- deals with verifications, reviews and audits tending towards the validation of the configuration information consistency. It details the principles described in EN 9223-100.

It is up to each programme responsible person to define the necessary details of application and tailoring in the Configuration Management plan.

Important remark:

Configuration audit doesn't be confused with quality audit (for detailed information, see 4.1).

This document does not deal with configuration system audits (quality audit) deployed within the scope of a programme. These audits stem from quality audits as defined in EN ISO 9001 (process conformity or efficiency audits).

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 9100, *Quality Management Systems — Requirements for Aviation, Space and Defence Organizations*

EN 9223-100, *Programme Management — Configuration Management — Part 100: A guide for the application of the principles of configuration management*²

EN 9223-101, *Programme Management — Configuration Management — Part 101: Configuration identification*²

EN 9223-105, *Programme Management — Configuration Management — Part 105: Glossary*²

EN ISO 9000, *Quality management systems — Fundamentals and vocabulary*

EN ISO 9001, *Quality management systems — Requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 9000, ISO 10007 and EN 9200 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

² Published as ASD-STAN Prestandard at the date of publication of this standard <http://www.asd-stan.org/>.

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- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

The specific terms needed to understand and to use the document are the object of definitions appearing in EN 9223-105.

4 The configuration verification, review and audit processes and their place in the overall programme Configuration Management

4.1 Configuration verification and audit process overview

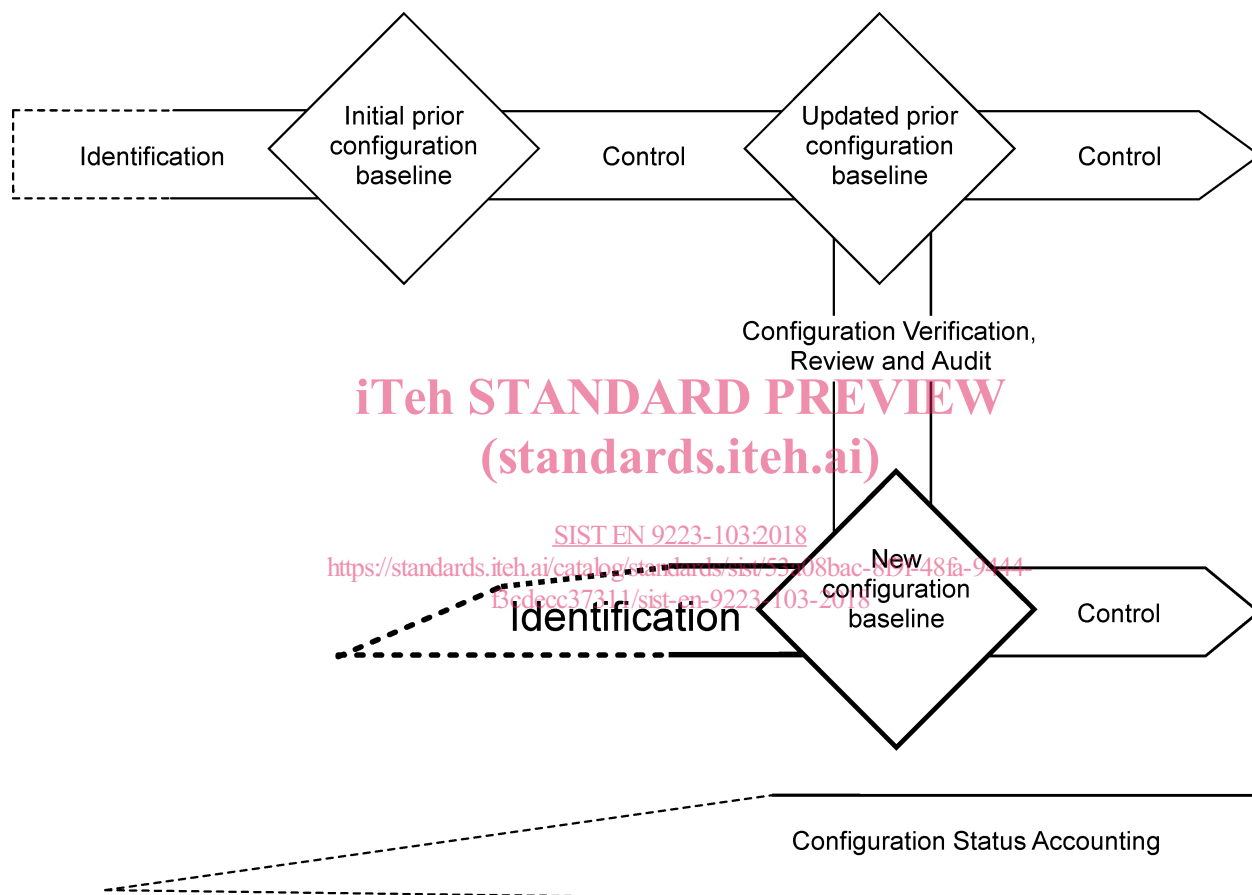


Figure 1 — Place of the configuration verification, review and audit process in Configuration Management processes

Important remarks:

Configuration audits shall in no case be performed by third party auditors (organisms accredited to deliver audits certificates on quality systems) because of the risk of losing restricted know-how. They are normally performed by a first party auditor (belonging to the company) and up to a point by a second-party auditor (customer).

4.2 Nature of the configuration verification and audit process

Configuration verification occurs at determined milestones during the system or product lifecycle, essentially linked to establishing and approval of configuration baselines and to verification of the

conformity of a specific unit of the product or achieved configuration item to these configuration baselines.

The configuration verification shall:

- assure that the design of the product guarantees the fulfilment of the specified requirements;
- validate the completeness and the accuracy of the product configuration information;
- assure the consistency between a product and its product configuration information;
- guarantee that the configuration control process shall be able to maintain the fulfilment of the requirements and the consistency between the product and its configuration information during the remaining of the lifecycle;
- guarantee that controlled configuration information is the basis for operational use, support, training, spare parts and repairs.

Configuration verification uses the configuration audit technique, which consists in:

- comparing defined characteristics in a configuration baseline to those presented by a realized and representative of to-be-delivered system, product or configuration item;
- identifying and highlighting gaps;
- obtaining an approved decision for each of them (concession or setting in conformity).

As the programme flows however, a certain amount of data belonging to configuration information and some Configuration Management activities linked to the phase of programme flow down can be subject to verifications. These verifications are achieved during configuration audits and reviews that sequence the lifecycle.

4.3 Configuration audits: ending activity and starting point

- the configuration audit is carried on a configuration item. That means it can exist at three levels: at system level, at product level and at configuration item lower level. It is a bottom-up approach: configuration audits for a system rely on the consolidation of the configuration audits for the products that make it up and themselves rely on configuration audits of the configuration items that make up these products;
- in the scope of a product design, configuration audits will end the implemented Configuration Management activities and thus will contribute to the qualification process. Indeed, if configuration information is described in documentation, it must also be achieved in the physical product. At the end of the development of an item, the audit aims at assuring that there is no gap (or at least they are under control) between the actual product and its representation in documentation. So this audit guarantees that the performances and the physical characteristics can be reproduced all along the operational life of this product;
- configuration audits are heavy-duty activities that should not be repeated. This does not mean that Configuration Management activities will end at this level. Particularly, control and status accounting activities will go on during the remaining of the lifecycle. These audits are meant to finalize the achievement of consistency between all the configuration baselines (FBL, ABL and PBL) at the end of the development phase and to show that the control process implemented allows

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maintaining this consistency without necessity for systematically redo complete configuration audits;

- the configuration audit finalizes the identification activity through approval of configuration baselines. It becomes the starting point for configuration control activities;
- in case of important changes in specifications and/or product design, there may be additional or new audit, especially for the following cases:
 - long life products;
 - obsolescence processing;
 - requirement for modernizing.

4.4 Configuration verification activities preliminary to the audits

- Before performing verifications, a procedure shall be established. It describes:
 - conditions;
 - methods;
 - means;
 - additional resources;
 - the associated organization;
 - the scheduling of verifications and of the audit.
- Configuration verification activities have to be planned making clear at which moment they occur, according to which process, and who will participate. Particularly for configuration audits, it is worth to make clear how they are embedded in the qualification process, at which level and up to which degree of sharpness they have to be performed;
- Before audits, it has to be checked that:
 - the configuration information used as baseline for configuration audits exists beforehand:
 - configuration baselines;
 - as-designed configurations;
 - status of technical changes that have to be implemented in the product before verification;
 - accepted deviations.
 - the systems, products or configuration items achieved are:
 - in a stable status;
 - representative of the end product (case of mass-produced product) including realization (methods and tools);

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- identified in compliance with specified arrangements.
- the whole documentation supporting the audit:
 - is identified in compliance with specified arrangements;
 - has been approved and recorded as required.

5 Configuration verification, review and audit activities

5.1 Configuration verification, review and audit activities overview

Configuration verifications are mainly associated with configuration reviews and audits. These verifications focus on completeness and consistency of documents that have to be used for reviews and audits. Some more specific verification is described in the following paragraphs.

5.2 Verifications during programme reviews (or equivalent milestones)

The reviews SSR/SR, PDR, CDR, TRR, QR, PRR, FAI have to be carried on at programme level and also at configuration items level. They are milestones on which Configuration Management can rely to perform a certain number of verifications that will facilitate the implementation of configuration audits.

The verifications proposals below concern the product configuration (physical and functional characteristics). Beyond these verifications, additional verifications about the process are needed that are outside the scope of this recommendation. Besides, some verifications about product configuration are also process verification (e. g. breakdown into configuration items).

SSR: System Specification Review (at system level):

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- verify that all the approved documents that define the technical requirements applicable to the system have been set in baseline (FBL);
- verify that the traceability of the documented and approved requirements with the stated needs has been demonstrated at the time of approval of these documents;
- if physical units for demonstration purpose (model, mock-up, feasibility prototypes, etc.) have been achieved to validate feasibility of all or part of technical requirements, verify that the configuration of units and all the evidences for feasibility have been recorded. As needed, this verification may be a sort of configuration pre-audit.

NOTE At a given level of authority, it may be as well no longer a matter of system but that of a configuration item said "header". Above verifications are nevertheless still in force in this case.

SR: Specification Review (at configuration item level):

- verify that all the approved documents that define the technical requirements applicable to the configuration item have been set in baseline (ABL);
- verify that the traceability of the documented and approved requirements applicable to the configuration items with the Functional Baseline of upper level has been demonstrated at the time of approval of these documents;
- if physical units for demonstration purpose have been achieved (model, mock-up, feasibility prototypes, etc.) to validate feasibility of all or part of technical requirements, verify that the