SLOVENSKI STANDARD
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Space project management - Organization and conduct of reviews

Space project management - Organization and conduct of reviews

Raumfahrtprojektmanagement - Organisation und Durchführung von Reviews

Management des projets spatiaux - Organisation et conduite de revues

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Space project management - Organization and conduct of reviews

Management des projets spatiaux - Organisation et
conduite de revues

Raumfahrtprojektmanagement - Organisation und
Durchführung von Reviews

This European Standard was approved by CEN on 22 December 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document EN 14093:2002 has been prepared by CMC.

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of an identical text or by endorsement, at the latest by August 2002, and conflicting national standards shall be withdrawn at the latest by August 2002.

It is based on a previous version[1] originally prepared by the ECSS Working Group M-30-01, reviewed by the ECSS Technical Panel and approved by the ECSS Steering Board. The European Cooperation for Space Standardization (ECSS) is a cooperative effort of the European Space Agency, National Space Agencies and European industry associations for the purpose of developing and maintaining common standards.

This Standard is one of the series of space standards intended to be applied together for the management, engineering and product assurance in space projects and applications.

Requirements in this Standard are defined in terms of what shall be accomplished, rather than in terms of how to organize and perform the necessary work. This allows existing organizational structures and methods to be applied where they are effective, and for the structures and methods to evolve as necessary without rewriting the standards.

The formulation of this standard takes into account the existing ISO 9000 family of standards.

Annex A is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Project reviews are examinations of the technical status of a project and associated issues at a particular point in time. Their primary purpose is to provide a comprehensive assessment and, through independent participation, to give additional support to the project concerned at crucial stages and to give the responsible management confidence in the technical progress being achieved.

The overall success of any review is dependent upon the planning, organization and specific assignment of responsibilities prior to the review work and the process established to close out the action items raised during the review. An inadequately prepared or conducted review has little chance of success, and even a well organized review will accomplish little if questions raised are not answered to the customer's satisfaction in a timely manner. Review members, not fully prepared for the review, will be neither effective nor productive. Thus, proper preparation of a review is essential for both the customer and supplier.

This European Standard belongs to the Space project management series called up by the "Policy and principles" Standard, EN 13290-1.

Reviews are carried out throughout the project life cycle, as shown in Figure 1 of EN 13290-4 at all levels from system to equipment level.

The review purpose, mandate and documentation vary for each particular project and for the specific phase or stage of activity of the project.

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[1] ECSS-M-30-01A

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1   Scope

This European Standard provides means for identifying and structuring all of the activities and information required in a project review. It identifies the information outputs and follow-up activities necessary to complete the review process. It also provides a check-list of activities and information required for each of the major project reviews identified in the European space management standards.

This standard does not prescribe a particular review procedure or organizational structure to be applied, in order to respect the customer's own rules and regulations.

When viewed from the perspective of a specific project context, the requirements defined in this standard should be tailored to match the genuine requirements of a particular profile and circumstances of a project.

NOTE   Tailoring is a process by which individual requirements of specifications, standards and related documents are evaluated and made applicable to a specific project by selection, and in some exceptional cases, modification of existing or addition of new requirements.

2   Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 13701, *Space systems — Glossary of terms.*

EN 13290-4, *Space project management — General requirements — Part 4: Project phasing and planning.*

3   Terms, definitions and abbreviated terms

3.1   Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 13701 and the following apply.

3.1.1
mission requirements document (MRD)
document defining mission parameters, overall system performance and system segment objectives

3.1.2
system requirements document (SRD)
document defining system function, overall system performance, system segment objectives and interfaces

3.2   Abbreviated terms

The following abbreviated terms are defined and used within this European Standard.

AIV   assembly integration and verification

AR   acceptance review

CDR	critical design review
CI	configuration item
CIDL	configuration item data list
D&D	design and development
DRL	document requirements list
ECSS	European Cooperation for Space Standardization
EOLR	end-of-life review
FQR	flight qualification review
FRR	flight readiness review
IF	interface
ILS	integrated logistic support
LRR	launch readiness review
MDR	mission definition review
MRD	mission requirements document
N/A	not applicable
ORR	operational readiness review
OTS	off-the-shelf
PA/S	product assurance and safety
PDR	preliminary design review
PRR	preliminary requirements review
QR	qualification review
RID	review item discrepancy
SRD	system requirements document
SRR	system requirements review
SWCI	software configuration item

4   Fundamentals of review

4.1   Basic principles

The basic principle applicable to reviews of all European space projects is that a thorough overall examination of the technical status of the project is performed at crucial steps of the programme, involving independent expertise. Reviews assess the work performed by all participants in a project against the stated project requirements, the application of the relevant requirements and standards and good engineering practice.

It is essential that the status of all elements of a system under review and its interfaces (e.g. launcher, spacecraft, ground segment, payloads and operations) are examined during the review process.

The objective of project review is to provide the customers management with assurance throughout the programme, that at the time of each specific review:

— the feasibility of meeting the mission objectives has been established;

— requirements are adequately defined so that by their fulfilment the mission objectives are satisfied;

— the design definition (including hardware, software, and operational approach) satisfies specified requirements for all parts of the system, including standardization where applicable;

— all configuration items conform to their design, configuration and performance requirements;

— verification of all specified requirements, from component to system level, has been demonstrated;

— no potentially serious risk has been overlooked which can affect safety, mission success or which can have major schedule or cost impact on the programme.

A review constitutes a major milestone in the project and a major responsibility for management. A review identifies potential problems at an early stage and, depending on the terms of reference of the review group, results in decisions or recommendations to the project management on how to solve those problems. In addition, the outcome of project reviews can serve to measure the suppliers' progress against prescribed requirements.

4.2 Stage of achievement and review definition

Each review should be planned to take place at a natural stage of work in progress and at times when sufficient information exists to start the next phase of work with confidence. The definition of this may vary slightly, depending on the nature of the project involved.

The principle adopted in EN 13290-4 is that activities may overlap project phases. Stricter definition may be adopted to formulate the required output for a specific phase. This is particularly true for the early stages of a project, and should be contained in the relevant project requirements document.

However, based on the system and product activities defined in clause 4 of EN 13290-4 and as further defined in clause 7, (determined by the principle "define down, make and verify up"), a corresponding review sequence has been derived in this Standard. For a review cycle, this means that:

a) requirements and design definition are established, from the level of mission objectives down to the lowest level of design;

b) verification is performed from the lowest level configuration item up to mission readiness level.

Requirements pertaining to the relationships between system level phases and reviews, as listed in clause 7 of EN 13290-4 are further detailed here in Tables 1, 2 and 3.

Formal project reviews are held at system level and are necessary at lower levels (subsystem, equipment and software items). The number and type of reviews is dependent on the project size, complexity, engineering criticality and whether it is a recurring product. Subsystem and equipment critical design and acceptance reviews are completed before the system level review is initiated.

System level reviews should involve the customer and the first level supplier. Lower level reviews should involve the first level supplier and his suppliers (and so on). The customer shall always have the right to attend any lower level project review, including those below the level of its direct suppliers.

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When exercising this latter right, the customer should act as an adviser who contributes based on the technical knowledge and experience of its representatives attending the review. In some cases, however, the customer may elect to maintain a formal direct involvement in specific lower level reviews to minimize technical or programmatic risk. Such cases shall be clearly identified in the business agreement, including role and prerogative of the customer during those reviews (i.e. review group co-chairmanship).

Using the typical project life cycle of EN 13290-4, the following reviews, designated in this standard, are considered:

— system requirements review;

— preliminary design reviews;

— critical design reviews;

— qualification reviews;

— acceptance reviews.

These important reviews are those usually carried out at any product level.

Table 1 — Stage of achievement versus review reference - Progressive definition of requirements

Stage of activity just completed	Review name (system level)	Output for the system	Output for subsystems	Output for equipment
Identification of user requirements and initial concepts.	Mission definition review **MDR**[a]	Confirmation of the mission requirements.	N/A	N/A
Initial mission or user requirements converted into overall system requirements, i.e. mission feasibility and validation of system architecture.	Preliminary requirements review **PRR**[b]	Confirmation of system feasibility and functional specification released. Requirements on system interfaces established by the first level customer.	Allocation of subsystem functional requirements.	N/A
System technical specification established.	System requirements review **SRR**[c]	Assessment of preliminary performance based on conformance with system functional requirements. Evaluation of major plans, (such as D&D, AIV, PA/S). Controlled configuration. System technical specification released, with inclusion of external interfaces.	Allocation of technical requirements on each subsystem.	Identification of technical requirements for critical technologies.
Preliminary design established.	Preliminary design review **PDR**	Assessment of performance based on analysis results, establishment of technological readiness and compatibility between design and customer requirements, approval of project plans (such as qualification plan, verification and test plan) and standards. Compatibility between design and customer requirements, confirmation of verification approach, special models design. Internal interfaces established.	Controlled configuration. Test and verification methods defined. Release of technical subsystem specifications.	Allocation of technical requirements on each equipment. Test and verification methods defined.
[a] Generally an internal consumer/customer review.				
[b] Generally internal customer review to confirm feasibility.				
[c] The system level SRR should be the baseline from which the first level supplier conducts his subsystem SRRs.				

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