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SLOVENSKI STANDARD
SIST EN 60300-2:2004

01-september-2004

Nadomešča:
SIST EN 60300-2:2002

Vodenje zagotovljivosti – 2. del: Program zagotovljivosti (IEC 60300- 2:2004)

Dependability management -- Part 2: Guidelines for dependability management

Zuverlässigkeitsmanagement -- Teil 2: Leitfaden zum Zuverlässigkeitsmanagement

Gestion de la sûreté de fonctionnement -- Partie 2: Lignes directrices pour la gestion de la sûreté de fonctionnement

Ta slovenski standard je istoveten z: **EN 60300-2:2004**

ICS:

03.120.01	Kakovost na splošno	Quality in general
21.020	Značilnosti in načrtovanje strojev, aparatov, opreme	Characteristics and design of machines, apparatus, equipment

SIST EN 60300-2:2004 **en**

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60300-2

April 2004

ICS 03.100.40; 03.120.01

Supersedes EN 60300-2:1996

English version

Dependability management
Part 2: Guidelines for dependability management
(IEC 60300-2:2004)

Gestion de la sûreté de fonctionnement
Partie 2: Lignes directrices pour la gestion
de la sûreté de fonctionnement
(CEI 60300-2:2004)

Zuverlässigkeitsmanagement
Teil 2: Leitfaden zum
Zuverlässigkeitsmanagement
(IEC 60300-2:2004)

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This European Standard was approved by CENELEC on 2004-04-01. CENELEC 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 Central Secretariat or to any CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60300-2:2004 E

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Foreword

The text of document 56/913/FDIS, future edition 2 of IEC 60300-2, prepared by IEC TC 56, Dependability, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60300-2 on 2004-04-01.

This European Standard supersedes EN 60300-2:1996.

Significant technical changes with regard to EN 60300-2:1996 are:

a) structural and terminological alignment with ISO;

b) focus on system processes;

c) provision of additional guidelines in annexes to facilitate applications.

The following dates were fixed:

–   latest date by which the EN has to be implemented
    at national level by publication of an identical
    national standard or by endorsement   (dop) 2005-01-01

–   latest date by which the national standards conflicting
    with the EN have to be withdrawn   (dow) 2007-04-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60300-2:2004 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60300-1	NOTE	Harmonized as EN 60300-1:2003 (not modified).
IEC 60300-3-12	NOTE	Harmonized as EN 60300-3-12:2004 (not modified).
IEC 60812	NOTE	Harmonized as HD 485 S1:1987 (not modified).
IEC 61025	NOTE	Harmonized as HD 617 S1:1992 (not modified).
IEC 61164	NOTE	Harmnonized as EN 61164:2004 (not modified)
ISO 9000	NOTE	Harmonized as EN ISO 9000:2000 (not modified).

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Annex ZA
(normative)

Normative references to international publications
with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE   Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60300-3-1	2003	Dependability management Part 3-1: Application guide - Analysis techniques for dependability - Guide on methodology	-	-
IEC 61014	1989	Programmes for reliability growth	-	-
ISO/IEC 15026	1998	Information technology - System and software integrity levels	-	-

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NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
60300-2

Deuxième édition
Second edition
2004-03

Gestion de la sûreté de fonctionnement –

Partie 2:
Lignes directrices pour la gestion
de la sûreté de fonctionnement

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Dependability management –

Part 2:
Guidelines for dependability management

CODE PRIX
PRICE CODE   **XA**

Pour prix, voir catalogue en vigueur
For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION
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DEPENDABILITY MANAGEMENT –

Part 2: Guidelines for dependability management

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

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International Standard IEC 60300-2 has been prepared by IEC technical committee 56: Dependability.

This second edition cancels and replaces the first edition, published in 1995, as well as IEC 60300-3-6 (1997). This edition constitutes a technical revision.

This edition includes the following significant technical changes with regard to the previous edition:

a) structural and terminological alignment with ISO;

b) focus on system processes;

c) provision of additional guidelines in annexes to facilitate applications.

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The text of this standard is based on the following documents:

FDIS	Report on voting
56/913/FDIS	56/934/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until 2010. At this date, the publication will be

• reconfirmed;
• withdrawn;
• replaced by a revised edition, or
• amended.

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INTRODUCTION

Dependability deals with the availability performance of a product. The factors influencing availability performance are reliability, maintainability and maintenance support performance. Dependability is a technical discipline that needs to be managed in order to achieve its objectives and benefits. Dependability management should provide a clear customer focus. It should be incorporated into an organization's overall management system to coordinate dependability activities for cost-effective results.

This part of IEC 60300 provides guidelines on dependability management. It supports the top-level dependability management system standard IEC 60300-1 by identifying and referencing relevant processes and methods for a broad range of products. This standard links the management process steps with applicable dependability standards to foster continual improvement.

The concept of product life cycle is introduced to deal with the significance of dependability activities and timing for their effective implementation. The association of product life cycle phases with the applicable dependability programme elements and tasks are presented to facilitate tailoring of dependability programmes to meet specific project needs.

This standard outlines the generic process for dependability applications based on successfully applied industry practices. It can be incorporated into the management systems of large corporations as well as being adaptable to small businesses.

Time-dependent reliability, maintainability and maintenance support performance characteristics in products are addressed.

This standard references other published TC 56 standards and also makes reference to several ISO/IEC standards as well as some sector specific reliability standards. These references are listed in the bibliography.

Annex A provides a summary description of the elements and tasks of a dependability programme for application.

Annex B defines the product life cycle phases.

Annex C presents an association of product life cycle phases with the applicable dependability elements and tasks.

Annex D presents process steps and standards for managing dependability.

Annex E provides a list of questions to facilitate dependability management review.

Annex F provides guidelines for the tailoring process.

Annex G presents the classification of dependability standards with the life cycle phases.

DEPENDABILITY MANAGEMENT –

Part 2: Guidelines for dependability management

1 Scope

This part of IEC 60300 provides guidelines for dependability management of product design, development, evaluation and process enhancements. Life cycle models are used to describe product development or project phases. A tailoring process is recommended for the selection of relevant dependability programme tasks for time-phased implementation to meet varied user needs.

This part of IEC 60300 is applicable for detailed planning and implementation of a dependability programme to meet specific product needs. The tailoring process provides a method for selection of dependability programme elements and associated processes from a product or project perspective. This standard is applicable to all organizations, during all life-cycle phases and in any contract situation, regardless of type, size and product provided.

2 Normative references

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The following referenced documents are indispensable for the application 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.
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IEC 60300-3-1, *Dependability management – Part 3-1: Application guide – Analysis techniques for dependability – Guide on methodology*

IEC 61014, *Programmes for reliability growth*

ISO/IEC 15026, *Information technology – System and software integrity levels*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE 1   Certain terms and definitions are taken from IEC 60050(191) and IEC 60300-1.

NOTE 2   ISO 9000 is used as a reference to quality vocabulary.

3.1
dependability
collective term used to describe the availability performance and its influencing factors: reliability performance, maintainability performance and maintenance support performance

NOTE   Dependability is used only for general descriptions in non-quantitative terms.

[IEC 60050, 191-02-03]

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3.2
dependability management
coordinated activities to direct and control an organization with regard to dependability

NOTE   Dependability management is part of an organization's overall management.

[IEC 60300-1, definition 3.2]

3.3
dependability management system
management system to direct and control an organization with regard to dependability

NOTE 1   The dependability management system of an organization is part of its overall management system.

NOTE 2   The organizational structure, responsibilities, procedures, processes and resources used for managing dependability are often referred to as a dependability programme.

[IEC 60300-1, definition 3.3]

3.4
dependability plan
document setting out the specific dependability practices, resources and sequences of activities relevant to a particular product, contract or project

[IEC 60300-1, definition 3.4]

3.5
dependability programme element
set of dependability programme tasks, pertaining to a specific subject area

3.6
dependability programme task
set of activities addressing specific dependability aspects of a product

3.7
product
result of a process

NOTE 1   There are four generic product categories, as follows:
– services (e.g. transport);
– software (e.g. computer program, dictionary);
– hardware (e.g. engine mechanical part);
– processed materials (e.g. lubricant).

Many products comprise elements belonging to different generic product categories. Whether the product is then called service, software, hardware or processed material depends on the dominant element. For example, the offered product "automobile" consists of hardware (e.g. tyres), processed materials (e.g. fuel, cooling liquid), software (e.g. engine control software, driver's manual), and service (e.g. operating explanations given by the salesman).

NOTE 2   Service is the result of at least one activity necessarily performed at the interface between the supplier and customer and is generally intangible. Provision of a service can involve, for example, the following:
– an activity performed on a customer-supplied tangible product (e.g. automobile to be repaired);
– an activity performed on a customer-supplied intangible product (e.g. the income statement needed to prepare a tax return);
– the delivery of an intangible product (e.g. the delivery of information in the context of knowledge transmission);
– the creation of ambience for the customer (e.g. in hotels and restaurants).

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Software consists of information and is generally intangible and can be in the form of approaches, transactions or procedures.

Hardware is generally tangible and its amount is a countable characteristic. Processed materials are generally tangible and their amount is a continuous characteristic. Hardware and processed materials often are referred to as goods.

NOTE 3   Quality assurance is mainly focussed on intended product.

[ISO 9000, definition 3.4.2]

NOTE 4   In the context of dependability, a product may be simple (e.g. a device, a software algorithm) or complex (e.g. a system or an integrated network comprising hardware, software and human elements and support facilities and activities).

[IEC 60300-1, definition 3.5]

**3.8
system**
set of interrelated or interacting elements

[ISO 9000, definition 3.2.1]

NOTE 1   In the context of dependability, a system will have

a)   a defined purpose expressed in terms of intended functions,

b)   stated conditions of operation/use,

c)   defined boundaries.

NOTE 2   The structure of a system may be hierarchical.

[IEC 60300-1, definition 3.6]

**3.9
reliability (performance)**
ability of an item to perform a required function under given conditions for a given time interval

[IEC 60050, 191-02-06, modified]

**3.10
maintainability (performance)**
ability of an item under given conditions of use, to be retained in, or restored to, a state in which it can perform a required function, when maintenance is performed under given conditions and using stated procedures and resources

[IEC 60050, 191-02-07, modified]

**3.11
maintenance support performance**
ability of a maintenance organization, under given conditions, to provide upon demand, the resources required to maintain an item, under a given maintenance policy

[IEC 60050, 191-02-08, modified]

**3.12
integrity level**
denotation of a range of values of a property of an item necessary to maintain system risks within tolerable limits

NOTE   For items that perform mitigating functions, the property is the reliability with which the item has to perform the mitigating function. For items whose failure can lead to a threat, the property is the limit on the frequency of the failure.

[ISO/IEC 15026, definition 3.9 modified]

3.13
item
entity
any part, component, device, subsystem, functional unit, equipment or system that can be individually considered

NOTE   An item may consist of hardware, software or both, and may also in particular cases, include people.

[IEC 60050, 191-01-01, modified]

3.14
process
set of interrelated activities utilizing resources to transform inputs into outputs

NOTE 1   Inputs to a process are generally outputs of other processes.

NOTE 2   Processes in an organization are generally planned and carried out under controlled conditions to add value.

NOTE 3   A process where the conformity of the resulting product cannot be readily or economically verified is frequently referred to as a "special process".

[ISO 9000, definition 3.4.1, modified]

3.15
supply-chain
coordinated set of management processes linking the activities of the supplier, the organization and the customer to meet a common objective

3.16
management
coordinated activities to direct and control an organization

NOTE   In English, the term "management" sometimes refers to people, i.e. a person or group of people with authority and responsibility for the conduct and control of an organization. When "management" is used in this sense it should always be used with some form of qualifier to avoid confusion with the concept "management" defined above. For example, "management shall…" is deprecated whereas "top management shall…" is acceptable.

[ISO 9000, definition 3.2.6]

3.17
top management
person or group of people who directs and controls an organization at the highest level

[ISO 9000, definition 3.2.7]

3.18
review
activity undertaken to determine the suitability, adequacy and effectiveness of the subject matter to achieve established objectives

NOTE   Review can also include the determination of efficiency.

EXAMPLE   Management review, design and development review, review of customer requirements and nonconformity review.

[ISO 9000, definition 3.8.7]

3.19
life cycle
time interval between a product's conception and its disposal

[IEC 60300-3-3, definition 3.1]