

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Managing risk in projects – Application guidelines

Gestion des risques liés à un projet – Lignes directrices pour l'application



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2013 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Liens utiles:

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Managing risk in projects – Application guidelines

Gestion des risques liés à un projet – Lignes directrices pour l'application

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

ICS 03.100.01

ISBN 978-2-8322-1192-2

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Managing risks in projects	9
5 Principles	11
6 Project risk management framework	12
6.1 General.....	12
6.2 Mandate and commitment.....	13
6.3 Design of the framework for managing project risk	14
6.3.1 Understanding the project and its context	14
6.3.2 Establishing the project risk management policy	14
6.3.3 Accountability	15
6.3.4 Integration into project management processes	16
6.3.5 Resources	16
6.3.6 Establishing internal project communication and reporting mechanisms	16
6.3.7 Establishing external project communication and reporting mechanisms	17
6.4 Implementing project risk management	17
6.4.1 Implementing the framework for managing project risk.....	17
6.4.2 Implementing the project risk management process	17
6.5 Monitoring and review of the project risk management framework	17
6.6 Continual improvement of the project risk management framework	18
7 Project risk management process	18
7.1 General.....	18
7.2 Communication and consultation.....	19
7.3 Establishing the context	20
7.3.1 General	20
7.3.2 Establishing the external context	20
7.3.3 Establishing the internal context	21
7.3.4 Establishing the context of the project risk management process.....	21
7.3.5 Defining risk criteria.....	22
7.3.6 Key elements.....	22
7.4 Risk assessment.....	23
7.4.1 General	23
7.4.2 Risk identification	23
7.4.3 Risk analysis	24
7.4.4 Risk evaluation	25
7.5 Risk treatment	25
7.5.1 General	25
7.5.2 Selection of risk treatment options	25
7.5.3 Risk treatment plans	26
7.6 Monitoring and review	26
7.7 Recording and reporting the project risk management process.....	27

7.7.1	Reporting.....	27
7.7.2	The project risk management plan	28
7.7.3	Documentation	28
7.7.4	The project risk register	28
Annex A (informative) Examples		30
A.1	General.....	30
A.2	Project risk management process	30
A.2.1	Stakeholder analysis (see 7.2).....	30
A.2.2	External and internal context (see 7.3.4).....	31
A.2.3	Risk management context (see 7.3.4).....	33
A.2.4	Risk management context for a power enhancement project.....	33
A.2.5	Risk criteria (see 7.3.5).....	34
A.2.6	Key elements (see 7.3.6).....	34
A.2.7	Risk analysis (see 7.4.3).....	36
A.2.8	Risk evaluation (see 7.4.4)	40
A.2.9	Risk treatment (see 7.5)	40
A.2.10	Risk register (see 7.4.2 and 7.7.4).....	41
Bibliography.....		42
Figure 1 – Principal stakeholders in a project.....		11
Figure 2 – Relationship between the components of the framework for managing risk, adapted from ISO 31000		13
Figure 3 – Project risk management process, adapted from ISO 31000.....		19
Figure A.1 – Risk management scope for an open pit mine project		34
Figure A.2 – Distribution of costs using simulation		40
Table 1 – Typical phases in a project.....		10
Table A.1 – Stakeholders for a government project.....		30
Table A.2 – Stakeholders and objectives for a ship upgrade		31
Table A.3 – Stakeholders and communication needs for a civil engineering project.....		31
Table A.4 – External context for an energy project.....		32
Table A.5 – Internal context for a private sector infrastructure project.....		33
Table A.6 – Criteria for a high-technology project		34
Table A.7 – Key elements for a communications system project.....		35
Table A.8 – Key elements and workshop planning guide for a defence project.....		36
Table A.9 – Key elements for establishing a new health service organization.....		36
Table A.10 – Example consequence scale		37
Table A.11 – Example likelihood scale		38
Table A.12 – Example of a matrix for determining the level of risk		38
Table A.13 – Example of priorities for attention.....		40
Table A.14 – Example of a treatment options worksheet		41
Table A.15 – Simple risk register structure.....		41

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MANAGING RISK IN PROJECTS – APPLICATION GUIDELINES

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62198 has been prepared by IEC technical committee 56: Dependability.

This second edition cancels and replaces the first edition, published in 2001, and constitutes a technical revision.

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

- a) major restructure and rewrite of the first version;
- b) now aligned with ISO 31000, *Risk management – Principles and guidelines*.

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

FDIS	Report on voting
56/1529/FDIS	56/1539/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 the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Every project involves uncertainty and risk. Project risks can be related to the objectives of the project itself or to the objectives of the assets, products or services the project creates. This International Standard provides guidelines for managing risks in a project in a systematic and consistent way.

Risk management includes the coordinated activities to direct and control an organization with regard to risk. ISO 31000, *Risk management – Principles and guidelines*, describes the principles for effective risk management, the framework that provides the foundations and organizational arrangements for designing, implementing, monitoring, reviewing and continually improving risk management throughout an organization and a process for managing risk that can be applied to all types of risk in any organization. This standard shows how those general principles and guidelines apply to managing uncertainty in projects.

This standard is relevant to individuals and organizations concerned with any or all phases in the life cycle of projects. It can also be applied to sub-projects and to sets of inter-related projects and programmes.

The application of this standard needs to be tailored to each specific project. Therefore, it is considered inappropriate to impose a certification system for risk management practitioners.

The guidance provided in this standard is not intended to override existing industry-specific standards, although the guidance can be helpful in such instances.

MANAGING RISK IN PROJECTS – APPLICATION GUIDELINES

1 Scope

This International Standard provides principles and generic guidelines on managing risk and uncertainty in projects. In particular it describes a systematic approach to managing risk in projects based on ISO 31000, *Risk management – Principles and guidelines*.

Guidance is provided on the principles for managing risk in projects, the framework and organizational requirements for implementing risk management and the process for conducting effective risk management.

This standard is not intended for the purpose of certification.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 31000, *Risk management – Principles and guidelines*

3 Terms and definitions

For the purpose of this document, the following terms or definitions apply.

3.1 project

unique process consisting of a set of coordinated and controlled activities, with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost and resources

Note 1 to entry: An individual project may form part of a larger project structure.

Note 2 to entry: In some projects the objectives are updated and the product characteristics defined progressively as the project proceeds.

Note 3 to entry: The project's product is generally defined in the project scope. It may be one or several units of product and may be tangible or intangible.

Note 4 to entry: The project's organization is normally temporary and established for the lifetime of the project.

Note 5 to entry: The complexity of the interactions among project activities is not necessarily related to the project size.

[SOURCE: ISO 10006:2003, 3.5] [1]¹

3.2 project management

planning, organizing, monitoring, controlling and reporting of all aspects of a project and the motivation of all those involved in it to achieve the project objectives

¹ References in square brackets refer to the Bibliography.