

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Nuclear power plants – Instrumentation and control important to safety –  
General requirements for systems**

**Centrales nucléaires de puissance – Instrumentation et contrôle-commande  
importants pour la sûreté – Exigences générales pour les systèmes**



## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2011 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  
Email: [inmail@iec.ch](mailto:inmail@iec.ch)  
Web: [www.iec.ch](http://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.

- Catalogue of IEC publications: [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

The IEC on-line Catalogue enables you to search by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, withdrawn and replaced publications.

- IEC Just Published: [www.iec.ch/online\\_news/justpub](http://www.iec.ch/online_news/justpub)

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

[IEC 61513:2011](#)

- Electropedia: [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms containing more than 20 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary online.

- Customer Service Centre: [www.iec.ch/webstore/custserv](http://www.iec.ch/webstore/custserv)

If you wish to give us your feedback on this publication or need further assistance, please visit the Customer Service Centre FAQ or contact us:

Email: [csc@iec.ch](mailto:csc@iec.ch)  
Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00

### 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.

- Catalogue des publications de la CEI: [www.iec.ch/searchpub/cur\\_fut-f.htm](http://www.iec.ch/searchpub/cur_fut-f.htm)

Le Catalogue en-ligne de la CEI vous permet d'effectuer des recherches en utilisant différents critères (numéro de référence, texte, comité d'études,...). Il donne aussi des informations sur les projets et les publications retirées ou remplacées.

- Just Published CEI: [www.iec.ch/online\\_news/justpub](http://www.iec.ch/online_news/justpub)

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

- Electropedia: [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 20 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International en ligne.

- Service Clients: [www.iec.ch/webstore/custserv/custserv\\_entry-f.htm](http://www.iec.ch/webstore/custserv/custserv_entry-f.htm)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions, visitez le FAQ du Service clients ou contactez-nous:

Email: [csc@iec.ch](mailto:csc@iec.ch)  
Tél.: +41 22 919 02 11  
Fax: +41 22 919 03 00



IEC 61513

Edition 2.0 2011-08

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Nuclear power plants – Instrumentation and control important to safety –  
General requirements for systems**

**Centrales nucléaires de puissance – Instrumentation et contrôle-commande  
importants pour la sûreté – Exigences générales pour les systèmes**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

**XD**

ICS 27.120.20

ISBN 978-2-88912-663-7

## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	9
1.1 General.....	9
1.2 Application: new and pre-existing plants.....	9
1.3 Framework.....	9
2 Normative references.....	12
3 Terms and definitions.....	13
4 Symbols and abbreviations.....	26
5 Overall I&C safety life cycle.....	26
5.1 General.....	26
5.2 Deriving the I&C requirements from the plant safety design base.....	29
5.2.1 General.....	29
5.2.2 Review of the functional, performance and independence requirements.....	29
5.2.3 Review of the categorisation requirements.....	30
5.2.4 Review of plant constraints.....	31
5.3 Output documentation.....	32
5.4 Design of the overall I&C architecture and assignment of the I&C functions.....	32
5.4.1 General.....	32
5.4.2 Design of the I&C architecture.....	33
5.4.3 Assignment of functions to systems.....	36
5.4.4 Required analysis.....	37
5.5 Overall planning.....	38
5.5.1 General.....	38
5.5.2 Overall quality assurance programs.....	38
5.5.3 Overall security plan.....	38
5.5.4 Overall I&C integration and commissioning.....	39
5.5.5 Overall operation plan.....	41
5.5.6 Overall maintenance plan.....	42
5.5.7 Planning of training.....	42
5.6 Output documentation.....	43
5.6.1 General.....	43
5.6.2 Architectural design documentation.....	43
5.6.3 Functional assignment documentation.....	43
6 System safety life cycle.....	44
6.1 General.....	44
6.2 Requirements.....	46
6.2.1 General.....	46
6.2.2 System requirements specification.....	47
6.2.3 System specification.....	52
6.2.4 System detailed design and implementation.....	55
6.2.5 System integration.....	57
6.2.6 System validation.....	58
6.2.7 System installation.....	59
6.2.8 System design modification.....	59

6.3	System planning.....	59
6.3.1	General .....	59
6.3.2	System quality assurance plan .....	60
6.3.3	System security plan .....	62
6.3.4	System integration plan .....	62
6.3.5	System validation plan.....	63
6.3.6	System installation plan.....	63
6.3.7	System operation plan .....	64
6.3.8	System maintenance plan.....	64
6.4	Output documentation .....	65
6.4.1	General .....	65
6.4.2	System requirements specification documentation.....	65
6.4.3	System specification documentation .....	66
6.4.4	System detailed design documentation .....	67
6.4.5	System integration documentation .....	68
6.4.6	System validation documentation.....	69
6.4.7	System modification documentation.....	69
6.5	System qualification .....	70
6.5.1	General .....	70
6.5.2	Generic and application-specific qualification .....	70
6.5.3	Qualification plan.....	71
6.5.4	Additional qualification of interconnected systems .....	72
6.5.5	Maintaining qualification .....	73
6.5.6	Documentation .....	73
7	Overall integration and commissioning .....	74
7.1	General.....	74
7.2	Requirements on the objectives to be achieved .....	75
7.3	Output documentation .....	75
8	Overall operation and maintenance .....	75
8.1	General.....	75
8.2	Requirements on the objectives to be achieved .....	75
8.3	Output documentation .....	76
Annex A	(informative) Basic safety issues in the NPP .....	77
Annex B	(informative) Categorisation of functions and classification of systems .....	80
Annex C	(informative) Qualitative defence approach against CCF.....	85
Annex D	(informative) Relations of IEC 61508 with IEC 61513 and standards of the nuclear application sector .....	89
Annex E	(informative) Changes to be performed in later revisions of SC 45A standards to adapt to this version of IEC 61513 .....	96
	Bibliography.....	98
	Figure 1 – Overall framework of this standard.....	11
	Figure 2 – Typical relations of hardware and software in a computer-based system .....	25
	Figure 3 – Relations between system failure, random failure and systematic fault.....	25
	Figure 4 – Connections between the overall I&C safety life cycle and the safety life cycles of the individual I&C systems .....	29
	Figure 5 – System safety life cycle.....	46

Figure 6 – Product- and plant-application-specific topics to be addressed in the system qualification plan..... 74

Figure B.1 – Relations between I&C functions and I&C systems ..... 81

Figure C.1 – Examples of assignment of functions of a safety group to I&C systems ..... 85

Table 1 – Overview of the overall I&C safety life cycle ..... 27

Table 2 – Correlation between classes of I&C systems and categories of I&C functions..... 33

Table 3 – Overview of the system safety life cycle ..... 44

Table B.1 – Typical classification of I&C systems..... 84

Table C.1 – Examples of CCF sensitive in safety groups ..... 86

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[IEC 61513:2011](#)

<https://standards.iteh.ai/catalog/standards/sist/96293b59-5ae4-4d4a-b1d7-bec9a339cda5/iec-61513-2011>

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

**NUCLEAR POWER PLANTS –  
INSTRUMENTATION AND CONTROL IMPORTANT TO SAFETY –  
GENERAL REQUIREMENTS FOR SYSTEMS****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 61513 has been prepared by subcommittee 45A: Instrumentation and control of nuclear facilities, of IEC technical committee 45: Nuclear instrumentation.

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

The main technical changes with regard to the previous edition are as follows:

- to align the standard with the new revisions of IAEA NS-R-1 and NS-G-1.3, to review the existing requirements and to update the terminology and definitions;
- to take account of, as far as possible, requirements associated with standards published since the first edition, especially IEC 60880, IEC 61226, IEC 62138, IEC 62340 and IEC 60987;
- to take into account the fact that software engineering techniques have advanced significantly in the intervening years;

- to integrate requirements for staff training.

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

FDIS	Report on voting
45A/838/FDIS	45A/848/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.

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

[IEC 61513:2011](#)

<https://standards.iteh.ai/catalog/standards/sist/96293b59-5ae4-4d4a-b1d7-bec9a339cda5/iec-61513-2011>



## INTRODUCTION

### a) Technical background, main issues and organisation of the standard

This International Standard sets out requirements applicable to instrumentation and control systems and equipment (I&C systems) that are used to perform functions important to safety in nuclear power plants (NPPs).

This standard highlights the relations between

- the safety objectives of the NPP and the requirements for the overall architecture of the I&C systems important to safety;
- the overall architecture of the I&C systems and the requirements of the individual systems important to safety.

It is intended that the standard be used by designers, operators of NPPs (utilities), systems evaluators and by licensors.

### b) Situation of the current standard in the structure of the IEC SC 45A standard series

IEC 61513 is the first level IEC SC 45A document tackling the issue of general requirements for systems. It is the entry point of the IEC SC 45A standard series.

For more details on the structure of the IEC SC 45A standard series, see item d) of this introduction.

**ITeH STANDARD PREVIEW**  
**(standards.iteh.ai)**

### c) Recommendations and limitations regarding the application of this standard

[IEC 61513:2011](#)

It is important to note that this standard establishes no additional functional requirements for safety systems.

<https://standards.iteh.ai/catalog/standards/sist/96293f58-5ae4-4d4a-b1d7-bec9a339cda5/iec-61513-2011>

To ensure that the standard will continue to be relevant in future years, the emphasis has been placed on issues of principle, rather than specific technologies.

### d) Description of the structure of the IEC SC 45A standard series and relationships with other IEC documents and other bodies documents (IAEA, ISO)

The top-level document of the IEC SC 45A standard series is IEC 61513. It provides general requirements for I&C systems and equipment that are used to perform functions important to safety in NPPs. IEC 61513 structures the IEC SC 45A standard series.

IEC 61513 refers directly to other IEC SC 45A standards for general topics related to categorisation of functions and classification of systems, qualification, separation of systems, defence against common cause failure, software aspects of computer-based systems, hardware aspects of computer-based systems, and control room design. The standards referenced directly at this second level should be considered together with IEC 61513 as a consistent document set.

At a third level, IEC SC 45A standards not directly referenced by IEC 61513 are standards related to specific equipment, technical methods, or specific activities. Usually these documents, which make reference to second-level documents for general topics, can be used on their own.

A fourth level extending the IEC SC 45A standard series, corresponds to technical reports which are not normative.

IEC 61513 has adopted a presentation format similar to the basic safety publication IEC 61508, with an overall safety life-cycle framework and a system life-cycle framework. Regarding nuclear safety, it provides the interpretation of the general requirements of IEC 61508-1 [1]<sup>1</sup>, IEC 61508-2 and IEC 61508-4, for the nuclear application sector. In this framework, IEC 60880 and IEC 62138 correspond to IEC 61508-3 [2] for the nuclear application sector.

IEC 61513 refers to ISO as well as to IAEA GS-R-3 and IAEA GS-G-3.1 for topics related to quality assurance (QA).

The IEC SC 45A standards series consistently implements and details the principles and basic safety aspects provided in the IAEA code on the safety of NPPs and in the IAEA safety series, in particular the requirements document NS-R-1, establishing safety requirements related to the design of nuclear power plants, and the safety guide NS-G-1.3 dealing with instrumentation and control systems important to safety in nuclear power plants. The terminology and definitions used by SC 45A standards are consistent with those used by the IAEA.

NOTE It is assumed that for the design of I&C systems in NPPs that implement conventional safety functions (e.g. to address worker safety, asset protection, protection from chemical hazards and process energy hazards), international or national standards would be applied, that are based on the requirements of such a standard as the IEC 61508 series.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[IEC 61513:2011](https://standards.iteh.ai/catalog/standards/sist/96293b59-5ae4-4d4a-b1d7-bec9a339cda5/iec-61513-2011)

<https://standards.iteh.ai/catalog/standards/sist/96293b59-5ae4-4d4a-b1d7-bec9a339cda5/iec-61513-2011>

---

<sup>1</sup> References in square brackets refer to the bibliography.

# NUCLEAR POWER PLANTS – INSTRUMENTATION AND CONTROL IMPORTANT TO SAFETY – GENERAL REQUIREMENTS FOR SYSTEMS

## 1 Scope

### 1.1 General

I&C systems important to safety may be implemented using conventional hard-wired equipment, computer-based (CB) equipment or by using a combination of both types of equipment (see Note 1). This International Standard provides requirements and recommendations (see Note 2) for the overall I&C architecture which may contain either or both technologies.

This standard highlights also the need for complete and precise requirements, derived from the plant safety goals, as a pre-requisite for generating the comprehensive requirements for the overall I&C architecture, and hence for the individual I&C systems important to safety.

This standard introduces the concept of a safety life cycle for the overall I&C architecture, and a safety life cycle for the individual systems. By this, it highlights the relations between the safety objectives of the NPP and the requirements for the overall architecture of the I&C systems important to safety, and the relations between the overall I&C architecture and the requirements of the individual systems important to safety.

The life cycles illustrated in, and followed by, this standard are not the only ones possible; other life cycles may be followed, provided that the objectives stated in this standard are satisfied.

<https://standards.iteh.ai/catalog/standards/sist/96293b59-5ae4-4d4a-b1d7-bec9a339cda5/iec-61513-2011>

NOTE 1 I&C systems may also use electronic modules based on complex electronic components such as ASICs or FPGA. Depending on the scope and functionality of these components, they may be treated according to the guidance for conventional electronic equipment, or similar to CB equipment. A significant part of the guidance for CB equipment is also applicable to the design of equipment with complex electronic components, including e.g. the concepts of re-using pre-existing designs, and the evaluation of design errors in software or complex hardware designs.

NOTE 2 In the following, “requirement” is used as a comprehensive term for both requirements and recommendations. The distinction appears at the level of the specific provisions where requirements are expressed by “shall” and recommendations by “should”.

### 1.2 Application: new and pre-existing plants

This standard applies to the I&C of new nuclear power plants as well as to I&C up-grading or back-fitting of existing plants.

For existing plants, only a subset of requirements is applicable and this subset should be identified at the beginning of any project.

### 1.3 Framework

The standard comprises four normative clauses (an overview is provided in Figure 1):

- Clause 5 addresses the overall architecture of the I&C systems important to safety:
  - defining requirements for the I&C functions, and associated systems and equipment derived from the safety analysis of the NPP, the categorisation of I&C functions, and the plant lay-out and operational context;
  - structuring the overall I&C architecture, dividing it into a number of systems and assigning the I&C functions to systems. Design criteria are identified, including those to give defence in depth and to minimize the potential for common cause failure (CCF);

- planning the overall architecture of the I&C systems.
- Clause 6 addresses the requirements for the individual I&C systems important to safety, particularly the requirements for computer-based systems. This includes differentiation of requirements according to the safety category of the I&C functions which are implemented;
- Clauses 7 and 8 address the overall integration, commissioning, operation and maintenance of the I&C systems.

NOTE Figure 1 outlines the structure of the standard. It does not necessarily present the timely order of activities which may be in reality partially executed in parallel, or include iterations.

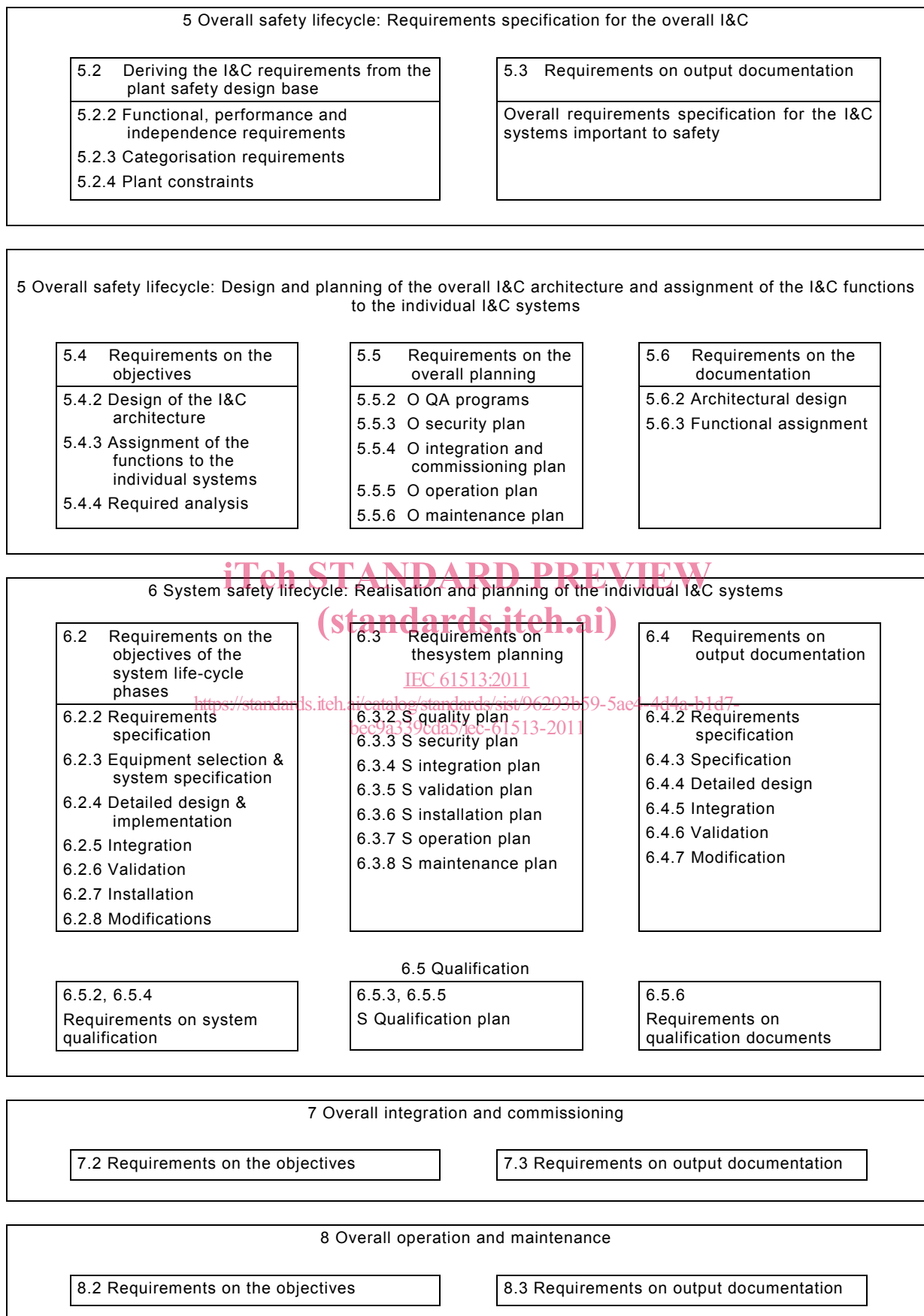
Additionally, the standard provides informative annexes:

- Annex A highlights the relations between IAEA and basic safety concepts that are used throughout this standard;
- Annex B provides information on the categorisation/classification principles;
- Annex C gives examples of I&C sensitivity to CCF;
- Annex D provides guidance to support comparison of this standard with parts 1, 2 and 4 of IEC 61508. This annex surveys the main requirements of IEC 61508 to verify that the issues relevant to safety are adequately addressed, considers the use of common terms and explains the reason for adopting different or complementary techniques or terms;
- Annex E indicates modifications to be made in future revisions of daughter standards of IEC 61513 to make them consistent and to minimize overlapping contents.

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

[IEC 61513:2011](#)

<https://standards.iteh.ai/catalog/standards/sist/96293b59-5ae4-4d4a-b1d7-bec9a339cda5/iec-61513-2011>



**Key** QA: Quality Assurance; O: Overall; S: System

**Figure 1 – Overall framework of this standard**

## 2 Normative references

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.

IEC 60671, *Nuclear power plants – Instrumentation and control systems important to safety – Surveillance testing*

IEC 60709, *Nuclear power plants – Instrumentation and control systems important to safety – Separation*

IEC 60780, *Nuclear power plants – Electrical equipment of the safety system – Qualification*

IEC 60880:2006, *Nuclear power plants – Instrumentation and control systems important to safety – Software aspects for computer-based systems performing category A functions*

IEC 60964:2009, *Nuclear power plants – Control rooms – Design*

IEC 60965, *Nuclear power plants – Control rooms – Supplementary control points for reactor shutdown without access to the main control room*

IEC 60980, *Recommended practices for seismic qualification of electrical equipment of the safety system for nuclear generating stations*

IEC 60987:2007, *Nuclear power plants – Instrumentation and control important to safety – Hardware design requirements for computer-based systems*

IEC 61000-4-1, *Electromagnetic compatibility (EMC) – Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61226:2009, *Nuclear power plants – Instrumentation and control systems important to safety – Classification of instrumentation and control functions*

IEC 61500, *Nuclear power plants – Instrumentation and control important to safety – Data communication in systems performing category A functions*

IEC 61508-2:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems*

IEC 61508-4:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 4: Definitions and abbreviations*

IEC 62138:2004, *Nuclear power plants – Instrumentation and control important for safety – Software aspects for computer-based systems performing category B or C functions*

IEC 62340, *Nuclear power plants – Instrumentation and control systems important to safety – Requirements for coping with common cause failure (CCF)*

ISO 9001:2008, *Quality management systems – Requirements*

IAEA INSAG-10:1996, *Defence in Depth in Nuclear Safety*

IAEA NS-R-1:2000, *Safety of Nuclear Power Plants: Design*

IAEA GS-R-3:2006, *The Management System for Facilities and Activities Safety – Requirements*

IAEA GS-G-3.1:2006, *Application of the Management System for Facilities and Activities – Safety Guide*

IAEA NS-G-1.3:2002, *Instrumentation and Control Systems Important to Safety in Nuclear Power Plants*

IAEA 75-INSAG-3 Rev. 1 – INSAG 12:1999, *Basic Safety Principles for Nuclear Power Plants*

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

### 3 Terms and definitions IEC 61513:2011

<https://standards.iteh.ai/catalog/standards/sist/96293b59-5ae4-4d4a-b1d7->

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

#### 3.1

##### **application function**

function of an I&C system that performs a task related to the process being controlled rather than to the functioning of the system itself

NOTE 1 See also “I&C function”, “I&C system”, “application software”.

NOTE 2 An application function is normally a subfunction of an I&C function.

#### 3.2

##### **application software**

part of the software of an I&C system that implements the application functions

NOTE 1 See also “application function”, “application software library”, “system software”.

NOTE 2 Application software contrasts with system software.

NOTE 3 See also Figure 2.

NOTE 4 In the context of complex electronic components, the term “application logic” may be inferred instead of “application software” where appropriate throughout this standard.

#### 3.3

##### **application software library**

collection of software modules implementing typical application functions

NOTE 1 When using pre-existing equipment, such a library is considered to be part of the system software and qualified as such.