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Road vehicles — Functional safety — Part 4: Product development at the system level

Véhicules routiers — Sécurité fonctionnelle —

Partie 4: Développement du produit au niveau du système



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Contents

Page

Foreword	v
Introduction.....	vi
1 Scope	1
2 Normative references	2
3 Terms, definitions and abbreviated terms	2
4 Requirements for compliance.....	2
4.1 General requirements	2
4.2 Interpretations of tables.....	3
4.3 ASIL-dependent requirements and recommendations	3
5 Initiation of product development at the system level	3
5.1 Objectives	3
5.2 General	4
5.3 Inputs to this clause.....	6
5.4 Requirements and recommendations	6
5.5 Work products	6
6 Specification of the technical safety requirements	7
6.1 Objectives	7
6.2 General	7
6.3 Inputs to this clause.....	7
6.4 Requirements and recommendations	7
6.5 Work products	10
7 System design	10
7.1 Objectives	10
7.2 General	11
7.3 Inputs to this clause.....	11
7.4 Requirements and recommendation	11
7.5 Work products	16
8 Item integration and testing	16
8.1 Objectives	16
8.2 General	16
8.3 Inputs to this clause.....	16
8.4 Requirements and recommendation	17
8.5 Work products	25
9 Safety validation	25
9.1 Objectives	25
9.2 General	25
9.3 Inputs to this clause.....	26
9.4 Requirements and recommendation	26
9.5 Work products	27
10 Functional safety assessment	28
10.1 Objectives	28
10.2 General	28
10.3 Inputs to this clause.....	28
10.4 Requirements and recommendation	28
10.5 Work products	28
11 Release for production	28

This is a preview of "ISO 26262-4:2011". [Click here to purchase the full version from the ANSI store.](#)

11.1	Objectives	28
11.2	General	29
11.3	Inputs to this clause	29
11.4	Requirements and recommendations	29
11.5	Work products	30
Annex A (informative)	Overview and document flow of product development at the system level	31
Annex B (informative)	Example contents of hardware-software interface	33
Bibliography		36

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 26262-4 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 26262 consists of the following parts, under the general title *Road vehicles — Functional safety*:

- *Part 1: Vocabulary*
- *Part 2: Management of functional safety*
- *Part 3: Concept phase*
- *Part 4: Product development at the system level*
- *Part 5: Product development at the hardware level*
- *Part 6: Product development at the software level*
- *Part 7: Production and operation*
- *Part 8: Supporting processes*
- *Part 9: Automotive Safety Integrity Level (ASIL)-oriented and safety-oriented analyses*
- *Part 10: Guideline on ISO 26262*

Introduction

ISO 26262 is the adaptation of IEC 61508 to comply with needs specific to the application sector of electrical and/or electronic (E/E) systems within road vehicles.

This adaptation applies to all activities during the safety lifecycle of safety-related systems comprised of electrical, electronic and software components.

Safety is one of the key issues of future automobile development. New functionalities not only in areas such as driver assistance, propulsion, in vehicle dynamics control and active and passive safety systems increasingly touch the domain of system safety engineering. Development and integration of these functionalities will strengthen the need for safe system development processes and the need to provide evidence that all reasonable system safety objectives are satisfied.

With the trend of increasing technological complexity, software content and mechatronic implementation, there are increasing risks from systematic failures and random hardware failures. ISO 26262 includes guidance to avoid these risks by providing appropriate requirements and processes.

System safety is achieved through a number of safety measures, which are implemented in a variety of technologies (e.g. mechanical, hydraulic, pneumatic, electrical, electronic, programmable electronic) and applied at the various levels of the development process. Although ISO 26262 is concerned with functional safety of E/E systems, it provides a framework within which safety-related systems based on other technologies can be considered. ISO 26262:

- a) provides an automotive safety lifecycle (management, development, production, operation, service, decommissioning) and supports tailoring the necessary activities during these lifecycle phases;
- b) provides an automotive-specific risk-based approach to determine integrity levels [Automotive Safety Integrity Levels (ASIL)];
- c) uses ASILs to specify applicable requirements of ISO 26262 so as to avoid unreasonable residual risk;
- d) provides requirements for validation and confirmation measures to ensure a sufficient and acceptable level of safety being achieved;
- e) provides requirements for relations with suppliers.

Functional safety is influenced by the development process (including such activities as requirements specification, design, implementation, integration, verification, validation and configuration), the production and service processes and by the management processes.

Safety issues are intertwined with common function-oriented and quality-oriented development activities and work products. ISO 26262 addresses the safety-related aspects of development activities and work products.

Figure 1 shows the overall structure of this edition of ISO 26262. ISO 26262 is based upon a V-model as a reference process model for the different phases of product development. Within the figure:

- the shaded “V”s represent the interconnection between ISO 26262-3, ISO 26262-4, ISO 26262-5, ISO 26262-6 and ISO 26262-7;
- the specific clauses are indicated in the following manner: “m-n”, where “m” represents the number of the particular part and “n” indicates the number of the clause within that part.

EXAMPLE “2-6” represents Clause 6 of ISO 26262-2.

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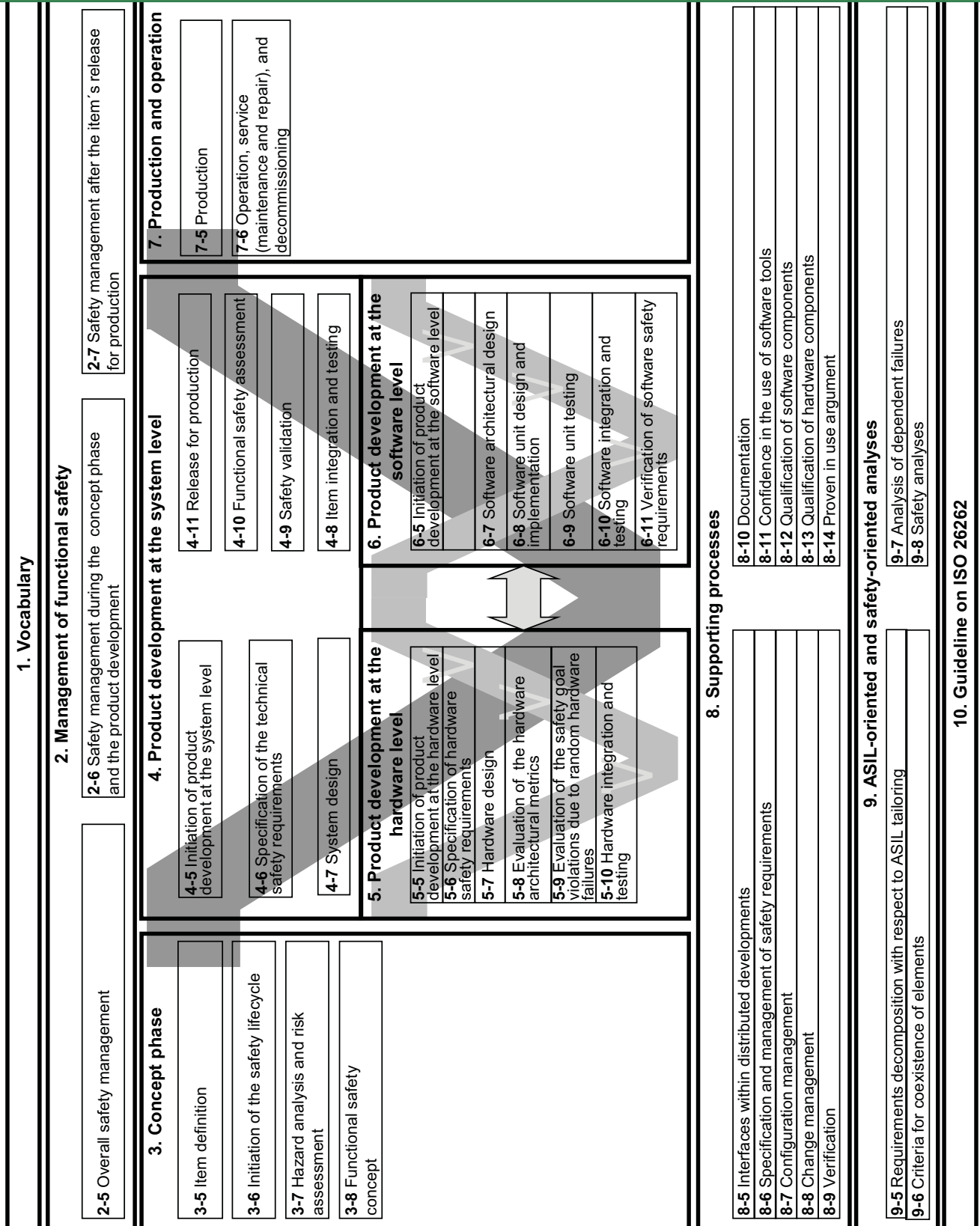


Figure 1 — Overview of ISO 26262