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GB/T 34590.2-2022

Replacing GB/T 34590.2-2017

Road Vehicles - Functional Safety - Part 2: Management of Functional Safety

道路车辆 功能安全 第 2 部分：功能安全管理

(ISO 26262-2:2018, MOD)

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Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 *Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This document is Part 2 of GB/T 34590 *Road Vehicles - Functional Safety*. GB/T 34590 has issued the following parts:

-- 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, Operation, Service and Decommissioning;

-- Part 8: Supporting Processes;

-- Part 9: Automotive Safety Integrity Level (ASIL)-oriented and Safety-oriented Analyses;

-- Part 10: Guideline;

-- Part 11: Guidelines on Applications to Semiconductors;

-- Part 12: Adaptation for Motorcycles.

This document serves as a replacement of GB/T 34590.2-2017 *Road Vehicles - Functional Safety - Part 2: Management of Functional Safety*. In comparison with GB/T 34590.2-2017, apart from structural adjustments and editorial modifications, the main technical changes are as follows:

-- The Scope of the Standard is modified from “series production passenger cars” into “series production road vehicles, excluding mopeds” (see Chapter 1; Chapter 1 of Version 2017);

-- The adaptation for motorcycles is added (see 4.5);

---The adaptation for goods vehicles, buses, special vehicles and trailers is added (see 4.6);

---The objectives of overall safety management are modified, and the goals to be achieved by organizations executing safety activities are clarified (see 5.1; 5.1 of Version 2017);

---The definitions of different phases and sub-phases of the safety lifecycle are modified (see 5.2.2.2; 5.2.2 of Version 2017);

---The concepts of confirmation measures, impact analysis at the item level, impact analysis at the element level, and release for production in other key concepts that need to be considered in the safety lifecycle are added (see 5.2.2.3);

---The communication between functional safety, cybersecurity, intended functional safety and other disciplines that are related to the achievement of functional safety is modified (see 5.4.2.3; 5.4.2.3 of Version 2017);

---The management of safety anomalies regarding functional safety is modified, and the conditions of the closure of safety anomalies and the management of safety anomalies are added (see 5.4.3; 5.4.2.5 of Version 2017);

---The work products of the overall safety management are modified, and evidence of a quality management system and identified safety anomaly reports are added (see 5.5; 5.5 of Version 2017);

---The objectives of project dependent safety management are modified (see 6.1; 6.1 of Version 2017);

---The general rules of project dependent safety management are modified (see 6.2; 6.2 of Version 2017);

---The requirements of project dependent safety management are modified (see 6.4; 6.4 of Version 2017);

---The impact analysis at the item level is added (see 6.4.3);

---The reuse of an existing element is added (see 6.4.4);

---The tailoring requirements for an evaluation of hardware elements and a qualification of software components, as well as the requirements for item developments for T&B are added (see 6.4.5);

---The requirements for the planning and coordination of the safety activities are modified (see 6.4.6; 6.4.3 of Version 2017);

---The requirements for safety case are modified, and the requirements for safety case in the case of a distributed development and the requirement that the safety case can be released progressively during the safety lifecycle to provide evidence for the safety arguments are added (see 6.4.8; 6.4.6 of Version 2017);

---The requirements for confirmation measures are modified, and the requirements for a functional safety audit to judge the implementation of the processes and a functional safety assessment to judge the achieved functional safety of the item, or the contribution to the achievement of functional safety are added (see 6.4.9; 6.4.7 of Version 2017);

---The requirements for confirmation reviews are added (see 6.4.10);

---The requirements for functional safety audit are modified, and the requirements for evaluation report are added (see 6.4.11; 6.4.8 of Version 2017);

---The requirements for functional safety assessment are modified, the requirements for the phase, scope and personnel of functional safety assessment are added, and the conditions for acceptance of the assessment are modified (see 6.4.12; 6.4.9 of Version 2017);

---The conditions and requirements for release for production are added (see 6.4.13);

---The work products are modified (see 6.5; 6.5 of Version 2017);

---The requirements for safety management regarding production, operation, service and decommissioning are modified, and the description of the phase after release for production is modified into the phase of production, operation, service and decommissioning (see Chapter 7; Chapter 7 of Version 2017).

This document has been modified using ISO 26262-2:2018 *Road Vehicles - Functional Safety - Part 2: Management of Functional Safety*.

In comparison with ISO 26262-2:2018, this document makes the following structural adjustment:

---Appendix C, Appendix D and Appendix E of this document correspond with Appendix E, Appendix C and Appendix D of ISO 26262-2:2018.

The technical differences between this document and ISO 26262-2:2018 and the causes for these differences are as follows:

-- The description of T&B is modified from “truck, bus, trailer and semi-trailer” into “goods vehicle, bus, special vehicle, trailer” (see 4.6; 4.6 of ISO 26262-2:2018), so as to maintain the consistency with the types of vehicles specified in GB/T 3730.1-2022 *Terms and Definitions of Motor Vehicles, Trailers and Combination Vehicle - Part 1: Types*;

---The normative reference GB/T 34590.12-2022 is used to replace ISO 26262-12 (see 4.5), so as to adapt to the technology of China.

This document makes the following editorial modifications:

-- The list of normative references in Chapter 2 is updated;

---The Introduction and its expression are modified;

---EXAMPLE 1 is added (see 5.4.2.3);

Road Vehicles - Functional Safety - Part 2: Management of Functional Safety

1 Scope

This document specifies the requirements for functional safety management for automotive applications, including the following:

---project-independent requirements with regard to the organizations involved (overall safety management), and

---project-specific requirements with regard to the management activities in the safety lifecycle, i.e. management during the concept phase and the product development phases (at the system, hardware and software level), and regarding production, operation, service and decommissioning.

This document is intended to be applied to safety-related systems that include one or more electrical and / or electronic (E/E) systems and that are installed in series production road vehicles, excluding mopeds.

This document does not address unique E/E systems in special vehicles such as E/E systems designed for drivers with disabilities.

NOTE: other dedicated application-specific safety standards exist and can complement this document, or vice versa.

Systems and their components released for production, or systems and their components already under development prior to the publication date of this document, are exempted from the scope of this edition. This document addresses alterations to existing systems and their components released for production prior to the publication of this document by tailoring the safety lifecycle depending on the alteration. This document addresses integration of existing systems not developed according to this document and systems developed according to this document by tailoring the safety lifecycle.

This document addresses possible hazards caused by malfunctioning behavior of safety-related E/E systems, including interaction of these systems. It does not address hazards related to electric shock, fire, smoke, heat, radiation, toxicity, flammability, reactivity, corrosion, release of energy and similar hazards, unless directly caused by malfunctioning behavior of safety-related E/E systems.

This document describes a framework for functional safety to assist the development of safety-related E/E systems. This framework is intended to be used to integrate functional safety activities into a company-specific development framework. Some requirements have a clear

technical focus to implement functional safety into a product; others address the development process and can therefore be seen as process requirements in order to demonstrate the capability of an organization with respect to functional safety.

This document does not address the nominal performance of E/E systems.

Appendix A provides an overview on objectives, prerequisites and work products of this document.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

GB/T 34590.1-2022 Road Vehicles - Functional Safety - Part 1: Vocabulary (ISO 26262-1:2018, MOD)

NOTE: there is no technical difference between the quoted content in GB/T 34590.1-2022 and the quoted content in ISO 26262-1:2018.

GB/T 34590.3-2022 Road Vehicles - Functional Safety - Part 3: Concept Phase (ISO 26262-3:2018, MOD)

NOTE: there is no technical difference between the quoted content in GB/T 34590.3-2022 and the quoted content in ISO 26262-3:2018.

GB/T 34590.4-2022 Road Vehicles - Functional Safety - Part 4: Product Development at the System Level (ISO 26262-4:2018, MOD)

NOTE: there is no technical difference between the quoted content in GB/T 34590.4-2022 and the quoted content in ISO 26262-4:2018.

GB/T 34590.5-2022 Road Vehicles - Functional Safety - Part 5: Product Development at the Hardware Level (ISO 26262-5:2018, MOD)

NOTE: there is no technical difference between the quoted content in GB/T 34590.5-2022 and the quoted content in ISO 26262-5:2018.

GB/T 34590.6-2022 Road Vehicles - Functional Safety - Part 6: Product Development at the Software Level (ISO 26262-6:2018, MOD)

NOTE: there is no technical difference between the quoted content in GB/T 34590.6-2022 and the quoted content in ISO 26262-6:2018.

GB/T 34590.7-2022 Road Vehicles - Functional Safety - Part 7: Production, Operation, Service

and Decommissioning (ISO 26262-7:2018, MOD)

NOTE: there is no technical difference between the quoted content in GB/T 34590.7-2022 and the quoted content in ISO 26262-7:2018.

GB/T 34590.8-2022 Road Vehicles - Functional Safety - Part 8: Supporting Processes (ISO 26262-8:2018, MOD)

NOTE: there is no technical difference between the quoted content in GB/T 34590.8-2022 and the quoted content in ISO 26262-8:2018.

GB/T 34590.9-2022 Road Vehicles - Functional Safety - Part 9: Automotive Safety Integrity Level (ASIL)-oriented and Safety-oriented Analyses (ISO 26262-9:2018, MOD)

NOTE: there is no technical difference between the quoted content in GB/T 34590.9-2022 and the quoted content in ISO 26262-9:2018.

GB/T 34590.12-2022 Road Vehicles - Functional Safety - Part 12: Adaptation for Motorcycles (ISO 26262-12:2018, MOD)

3 Terms and Definitions

The terms and definitions defined in GB/T 34590.1-2022 are applicable to this document.

4 Requirements

4.1 Purpose

This chapter describes how:

a) to achieve compliance with GB/T 34590;

b) to interpret the tables used in GB/T 34590; and

c) to interpret the applicability of each chapter, depending on the relevant ASIL(s).

4.2 General Requirements

When claiming compliance with GB/T 34590, each requirement shall be met, unless one of the following applies:

a) tailoring of the safety activities in accordance with this document has been performed that shows that the requirement does not apply; or

b) a rationale is available that the non-compliance is acceptable and the rationale has been evaluated in accordance with this document.

during the safety lifecycle to support the safety argument.

NOTE 1: in the case of a distributed development, the safety case of the item can be a combination of the safety cases of the customer and of the suppliers, which references evidence from the work products generated by the respective parties. Then the overall argument of the item is supported by arguments from all parties. The interfaces between the customer and a supplier are defined in a Development Interface Agreement (see GB/T 34590.8-2022, Chapter 5).

NOTE 2: to support safety planning according to 6.4.6, the intended safety arguments can be identified prior to work products becoming available. To support progressive functional safety assessments according to 6.4.12.3 the safety case can be released progressively as work products are generated to provide evidence for the safety arguments.

6.4.9 Confirmation measures

6.4.9.1 The functional safety of the item and its elements shall be confirmed, based on:

a) confirmation reviews to judge whether the key work products, i.e. those included in Table 1, provide sufficient and convincing evidence of their contribution to the achievement of functional safety, considering the corresponding objectives and requirements of GB/T 34590, in accordance with Table 1 and 6.4.10;

NOTE 1: the confirmation reviews are performed for those work products that are specified in Table 1 and required by the safety plan.

b) a functional safety audit to judge the implementation of the processes required for functional safety, in accordance with Table 1 and 6.4.11; and

NOTE 2: the reference processes required for functional safety are defined in GB/T 34590. The processes pertaining to an item or element are defined through the activities referenced or specified in the safety plan.

c) a functional safety assessment to judge the achieved functional safety of the item, or the contribution to the achievement of functional safety by the developed elements, in accordance with Table 1 and 6.4.12.

NOTE 3: the aim of the independence defined in Table 1 is to ensure an objective, unbiased viewpoint and to avoid conflict of interest. The use of the term “independence” in this document relates to organizational independence.

NOTE 4: guidance for the confirmation measure is given in Appendix D.

NOTE 5: a report that is a result of a confirmation measure includes the name and revision number of the work products or process documents analyzed (see GB/T 34590.8-2022, Chapter 10).

NOTE 6: if the item changes subsequent to the completion of confirmation measures, then the

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