INTERNATIONAL STANDARD

ISO
11748-2

Road vehicles — Technical documentation of electrical and electronic systems —

Part 2:
Documentation agreement

Véhicules routiers — Documentation technique des systèmes électriques et électroniques —

Partie 2: Accord documentaire

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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 3.

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 part of ISO 11748 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11748-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 11748 consists of the following parts, under the general title *Road vehicles — Technical documentation of electrical and electronic systems*:

— *Part 1: Content of exchanged documents*

— *Part 2: Documentation agreement*

— *Part 3: Application example*

Road vehicles — Technical documentation of electrical and electronic systems —

Part 2:
Documentation agreement

1 Scope

This part of ISO 11748 gives guidelines for the structure and content of the documentation agreement established between partners in the development of on-board electronic control systems used in road vehicles. The documentation agreement describes the exchange of documents between the partners and is specific to a given development. This part of ISO 11748 provides a framework for any such agreement.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 11748. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 11748 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 11748-1, *Road vehicles — Technical documentation of electrical and electronic systems — Part 1: Content of exchanged documents*.

3 Basic principles

The development of electrical and electronic systems necessitates the exchange of technical information between the actors involved in the process. This exchange can occur on any of the following levels.

Final document views: the presentation of the documentation to the human reader with a given content and layout.

Document base: a tool-independant structure of technical data elements.

Engineering database: the entire set of data appearing in the engineering process.
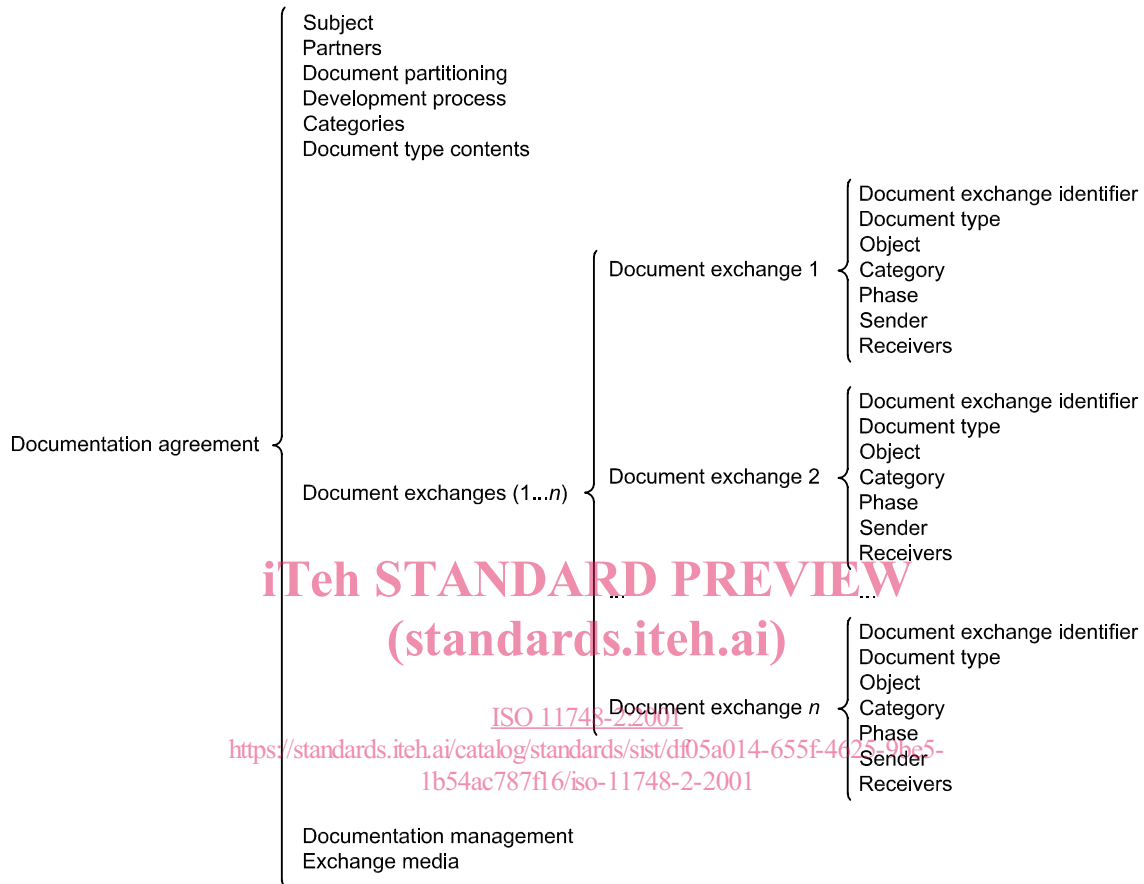
An example of the first two levels is given in ISO 11748-3. Clause 4 of this part of ISO 11748 defines

— the document agreement structure, and

— the required content of each part of the documentation agreement.

4   Structure

4.1   General

The documentation agreement contains the following items of information (see 4.2 to 4.10).

Although this is the basis for the documentation agreement, there is no assumption made as to its final document view. For example, an exchange may be sorted by document type, object or phase.

4.2   Subject

This item specifies the development of the electrical or electronic system to which the documentation agreement applies. As documentation agreements are applicable to any development process, regardless of the number or nature of the companies involved (one or several vehicle manufacturers, component suppliers, software houses, etc.), documentation exchanges within the same company during the development process may also be covered.

4.3   Partners

This item names the development process participants who will produce or receive the technical documents covered by the documentation agreement. They may be individuals, teams or companies, provided there is no ambiguity about responsibility for providing or receiving a document. For each partner identified, appropriate contact information shall be provided (e.g. technical and administrative responsible persons, mail and e-mail addresses).

4.4 Document partitioning

A document exchanged during the development process may apply to the whole electrical or electronic system covered by the subject or only part of it.

The document partitioning section describes how the electrical or electronic system is decomposed into subsystems for the purposes of documentation. This decomposition may be iterated upon the subsystems, until the lowest level for which a dedicated exchanged document exists is reached.

The partitioning can be performed according to multiple criteria such as

— physical criteria (e.g. a system is decomposed into ECU, sensors and actuators),

— technological criteria (e.g. an ECU consists of electronics, software, connections, mechanics),

— commercial criteria (e.g. the co-development of an ECU), and

— any other criteria considered suitable for structuring the exchanged information (e.g. an instrument panel can be described in terms of its style design, ergonomics and engineering).

The information in this section may be represented as a decomposition tree. Each node or leaf in the tree shall identify unambiguously a subset of the whole system.

4.5 Development process

A development process generally consists of nested subprocesses, each with its own phases (e.g. successive vehicle prototypes, ECU levels of conformity, software or calibration versions). A technical document exchanged during the development process generally applies to a particular phase of a given process.

Development process

— identifies the relevant phases of planning for the development process and subprocesses,

— describes the synchronization of processes and phases needed to determine which documents are relevant during any phase of a process, and

— makes explicit, for each phase of each process, the main hypothesis behind the created or handled information that justifies the existence of documents during this phase.

  EXAMPLE   During a rapid prototyping phase, it is usual not to have detailed hardware design documents.

4.6 Categories

This is the list of all categories of document exchanges during the process. The following are typical categories.

a) Requirements: identified needs for the subject to which the document applies. Depending upon the technical data element selected for a given exchange, this could lead to documents such as

— functional requirements,

— interface requirements, or

— environmental requirements.

b) Specifications: set of functional characteristics, realization restraints, quality demands, reliability, servicing or availability demands, system interfaces with the environment and system-associated performances. Depending on the technical data element selected for a given exchange, this could lead to a given document. This category can be further refined into

— functional specifications,

— interface specifications, and

— environmental specifications.

c) Design documents:

— architectures: identification of subsystems of the system function, distribution of that function into subsystems, description of functional chains, allocation of resources and constraints; the system decomposition shall be that described in the document partitioning section (see 4.4);

— signal: description of the signals or messages exchanged between subsystems in the case of physical partitioning;

— dependability: preliminary hazard analysis, FMEA, reliability analysis, etc.

d) Verification and validation documents:

— specifications against requirements,

— design against specifications,

— tests against design,

— tests against specifications,

— tests against requirements,

— test/review plans,

— review checklists,

— test/review reports, and

— review report.

These categories are not mandatory, and others may be added for the convenience of the partners.

4.7 Document type contents

This item describes the content of each identified document according to ISO 11748-1.

The mandatory or optional nature of the technical data element of the document shall be defined by this item.

4.8 Document exchanges

4.8.1 General

This item lists, for each document exchange covered by the documentation agreement, the identification, name and contents, schedule, author and readers of the exchanged document. It comprises the following.

4.8.2 Document exchange identifier

This uniquely identifies a single document exchange. A document is here considered a snapshot of the available development process information frozen at the moment of exchange. If the same set of information is to be exchanged several times during the development, each exchange shall have different identification.

4.8.3 Document type

This is a reference to the previously defined document type specified according to 4.7.

4.8.4 Object

This is the system part to which the document exchange applies, according to the decomposition performed under document partitioning. It can be any node or leaf of the decomposition tree, including the entire electrical or electronic system.

4.8.5 Category

This is a category according to 4.6.

4.8.6 Phase

This is the planned phase to which the document corresponds, according to development process (see 4.5). Depending on the subject of the document, it may be a phase from a subprocess, provided that the description of the process synchronization under development process allows its correlation with any phase applicable to any system containing the documented subject.

NOTE   The required documents could be needed at any time in the phase as a perquisite, as a working document, or as a output of the phase.

4.8.7 Schedule

This covers the date on which the document exchange is scheduled to be performed. It shall be consistent with the development process schedule according to phase.

4.8.8 Sender

This unique development process partner, covered by partners (see 4.3), is responsible for performing the document exchange, though not necessarily an author of the document.

4.8.9 Receivers

One or more development process partners.

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4.9 Documentation management

This item describes the documentation management scheme agreed upon by the partners, including identification, approval, distribution, modification, filing, intellectual property and ownership.

4.10 Exchange media

This item defines the supports, formats and encoding agreed upon by partners for document exchange. Any format convenient for the partners may be adopted, including: engineering data base formats (e.g. STEP, VHDL, SET, SGML proprietary CAD formats), document base formats (e.g. graphics formats for SGML such as GIF, EPS, TIFF), final document view formats (e.g. paper, PDF, PostScript, HTML), or others such as video recording and solid model.

5 Establishing the document exchange list

It is a recommended that the system decomposition, development process and categories items be included in a checklist of any possible document exchanges between partners submitted when establishing the list of document exchanges covered by the documentation agreement.