

Martin Tillmann

Michael Fritz / Claudia Klumpp / Martin Rieder /

Roland Schmeling / Stephan Schneider

Implementation of IEC/IEEE 82079-1 Ed. 2

excerpt

Considering other
Sector-Specific Standards

Practical Guides

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Phone +49 711 65704-0, Fax +49 711 65704-99
e-mail info@tekom.de, www.tekom.de

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1 Introduction

IEC/IEEE 82079-1 Edition 2 Preparation of information for use (instructions for use) of products – Part 1: Principles and general requirements since its publication in 2012 has developed into the most important standard in the field of technical communication. As a so called “horizontal standard” it is applicable to any type of product and all branches of the industry.

Note:

The present commentary always refers to edition 2 of the standard without specifically saying so in each instance.

1.1 Why was the standard revised?

Generally, all standards are subject to a five-year scrutiny and revision cycle. The revision of IEC 82079-1 was initiated as early as 2014. The so called “review report” laid down an outline for this revision: Not only revision errors, such as faulty references, should be corrected; rather, it was clear from the outset that this would be a comprehensive revision dealing in depth with the issues not considered in the first edition; it would contain substantial improvements, new content and address new findings from current practice.

The structure of the standard was identified as a major weakness. Many topics and their related aspects were scattered across the entire standard, resulting in lack of clarity and user-friendliness. Additionally, the comprehensibility of the standard needed improvement, as some passages were incomprehensible or ambiguous.

With regard to the standard’s content, the review report mentioned some new topics to which the revised edition should attribute greater importance. In particular, this includes the quality assurance process, which should be given more room—including a definition of pertinent quality criteria. Primarily, the information development process should be represented in greater detail. Also, information on the general principles of and criteria for structuring information were to be added. The structure of step-by-step instructions was to be a key aspect.

1.2 Who shared in the revision?

The revision was handled by a joint working group JWG 16 (Joint Working Group 16) of the two standardisation organisations ISO (International Organization for Standardization) and IEC (International Electrotechnical Commission). The basis for this cooperation is an agreement between the two standardisation organisations to the effect that a standard shall bear only the name of the organisation that took the lead in its preparation. Since IEC always spearheaded the development of 82079-1, the previous standard bore the designation IEC 82079-1 although it was and still is also supported by ISO. It is important to note this, because the acceptance of a particular standard in some industry branches may depend on the standardisation organisation that has published it. For instance, standardisation for mechanical

engineering is mainly issued by ISO, making it harder for IEC standards to gain the necessary acceptance by mechanical engineering companies.

Additionally, a third large standardisation organisation shared in preparing the standard, IEEE (Institute of Electrical and Electronics Engineers, see figure 1). Since only IEC and IEEE have an agreement concerning joint publication of standards, the new edition's designation only reads IEC/IEEE. We consider this unfortunate, because ISO is still supporting its publication. Visibility and significance of the standard in the US market, however, will have grown with IEEE sharing.

International level	ISO iso.org		IEC iec.ch		IEEE* ieee.org
National level worldwide	DIN din.de	SAC sac.gov.cn	SA standards.org.au	ANSI ansi.org	JIS jisc.go.jp (and further org.)
Europe	CEN cen.eu		CENELEC cenelec.eu		
National level in Europe	ASI austrian-standards.at	UNI uni.com	DS ds.dk	SFS sfs.fi	BSI bsigroup.com (and further org.)
	DIN din.de		DKE VDE dke.de		

* of special interest: IEEE (Institute of Electrical and Electronics Engineers), as one of the largest professional associations worldwide, has participated on the international level.

Figure 1: Standardisation organisations, international and national

The following overview in Figure 2 shows the time line of the work by JWG 16. By the way: Many of the participants in JWG 16 are working in an honorary capacity, which has had some influence on the composition of the committee.

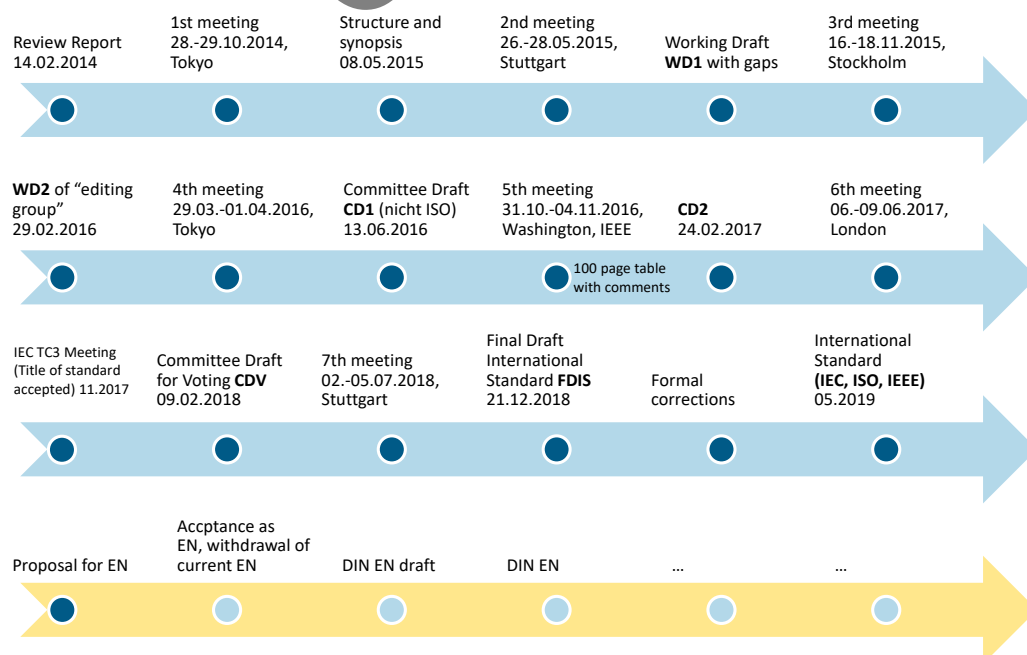


Figure 2: Time line of the standard's revision

In all, 21 experts from nine countries participated in the revision effort. Additionally, experts from numerous further countries commented the draft standards and thereby contributed to the international applicability of the standard.

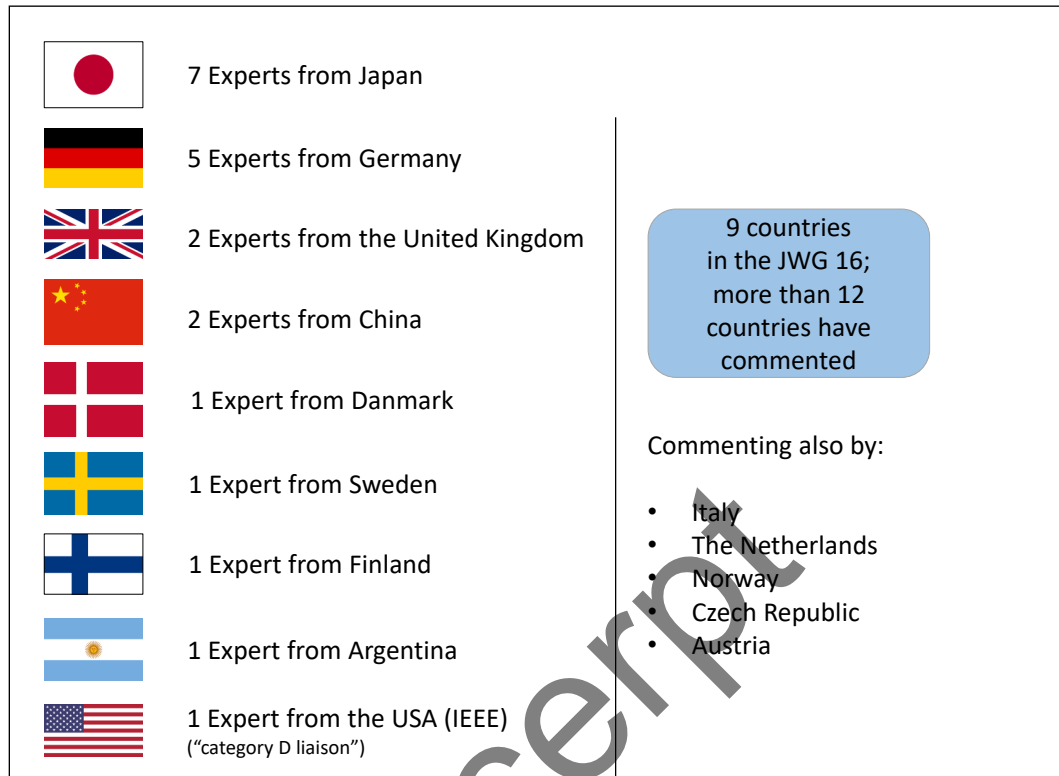


Figure 3: Composition of the Joint Working Group 16 by countries

1.3 Participation of tekcom and the share of the authors of the present publication

Never before has tekcom been involved as intensively in a standardisation project as in this revision. tekcom was directly represented by Dr. Michael Fritz and Dr. Claudia Klumpp. In 2017, Dr. Klumpp assumed the convenor-ship, that is she acted as the chairperson of the working group. Roland Schmeling and Stephan Schneider shared in the international working group as leading experts.

Martin Tillmann, the primary author of the present guide, contributed significantly to the work of the German mirror committee for IEC/IEEE 82079-1, DEK GUK 113.1. Martin Rieder is an expert of the international working group ISO TC 199 WG5, that worked on *ISO 20607 Safety of machinery – Instruction handbook – General drafting principles*.

The background knowledge of the authors about the entire revision process and the numerous discussions, for instance regarding the development of the new concept of “information for use”, has found its way into this practical implementation guide.

1.4 Who are in the target audience of this practical implementation guide?

The target audience is identical with the target audience of the standard itself: The practical implementation guide is addressed to all those who are responsible for or who share in the design, preparation, sustainment, translation, localisation, integration of content, production and delivery of information for use.

1.5 Normative contents and innovations

Upon restructuring, IEC/IEEE 82079-1 now contains the following sections:

- (1) Scope
 - (2) Normative references
 - (3) Terms and definitions
 - (4) Fulfilment of requirements (previously: evaluation of conformity)
 - (5) Principles
 - (6) Information management process
 - (7) Content of information for use
 - (8) Structure of information for use
 - (9) Media and format of information for use
 - (10) Professional competencies
- Annex A (informative): Guidance on evaluation (of fulfilment of requirements)

The scope outlined in *section 1* has not been extended, but defined in more detail. The normative references and definitions of terms in *sections 2 and 3* have been revised but—apart from the new concept of information for use—do not hold any great surprises.

Section 4 replaces *section 7* (Evaluation of conformity) of the previous version. Based on ISO and IEC the section was renamed and moved up front.

Section 4, in discussing the options for providing evidence of fulfilment of the requirements of the standard, contains a pertinent novelty: A supplier cannot not only claim to have fulfilled the requirements for the information for use, but may also claim fulfilment of the requirements for the information management process. It is at the supplier's discretion whether he wishes to claim to have fulfilled just the requirements for the information for use or also the requirements for the information management process. This serves to emphasise the importance of the new *section 6*, which outlines the requirements for the information management process. However, for consumer products fulfilment of the requirements for the information for use alone is relevant.

Scattered across the standard, already the first edition contained quality principles concerning information for use. These are now neatly collected and presented in clearer and more consistent wording in *Section 6*, under the heading "Principles". The "Minimalism" principle has been added, now resulting in a total of seven principles governing high-quality information for use:

- completeness
- minimalism
- correctness

- conciseness
- consistency
- comprehensibility
- accessibility

Section 6 is dedicated entirely to the information management process. The information management process is characterised by the principle of employing reproducible procedures.

The following four process groups are differentiated and dealt with in a subsection each:

- analysis and planning of information (subsection 6.2)
- design and development, including review, editing and testing (subsection 6.3)
- production and distribution (subsection 6.4)
- sustainment, maintenance and improvement (subsection 6.5)

A large subsection has been dedicated to analysis of the target audience(s). Analysis of the target audience is not a new requirement; however, so far only few organisations have a sufficiently meaningful target audience analysis, which can be used in developing appropriate information products. The detailed presentation of target audience analysis is meant to contribute to improving this situation.

The contents of information for use are covered in *section 7*. At first glance, many content items well known from the previous version are still listed. Viewed in detail, however, a large number of new items have also been added. For instance, the requirements for information about spare parts and consumables have been substantiated, and the requirements for the contents of a safety clause or section have been revised.

Section 8 is dedicated to the structure of information for use and is much more detailed than subsection 5.15 of the previous edition. For instance, the section recommends structuring information for use based on an information type model, and thus recommends following the three methods listed below:

- developing an information model by using a structuring method
- using an existing information model, for example an open source information model
- adapting an existing information model by using a structuring method

Section 8 provides for in-depth assistance in selecting suitable structuring principles. Additionally, this section describes the structure of step-by-step instructions concretely and comprehensively.

Section 8.4 is dedicated to navigating in and delivery of information for use. “Navigating” printed information for use continues to be covered. However, the focus now is on the aspects of dynamic delivery of information for use, e. g. pertaining to context sensitivity and search functions.

Section 9 addresses diverse means of communication, media, and the presentation of information for use; it contains specifications for durability, availability and presentation, including design of safety notes and warning messages.

Additionally, the external conditions of use have been addressed, to support the selection of the correct format or medium. For instance, if the target audience is

service technicians for heating systems, who are often working in badly illuminated cellars, paper as a medium is not the optimum choice.

In summary, *section 9* contains numerous requirements already covered by the previous edition of the standard. One of those is the overview of recommended text font sizes.

Section 10, as a novelty, presents task and proficiency-related competencies for the designers/authors of information for use as well as requirements and recommendations for the competencies of translators. The first edition of the standard contained a short subsection (4.2) on this subject; however, the concept of absolute requirements for competencies has been dropped and replaced by process-oriented competency definitions. These are meant to support enterprises in developing the concrete requirements for the personnel involved in the information management process.

1.6 Structure of this implementation guide

Note:

The standard is subdivided into “sections” and “subsections”. This implementation guide is subdivided into chapters. Therefore, references to “sections” refer to the standard, while references to “chapters” refer to the present implementation guide.

The implementation guide focuses on practical implementation of the standard. Since the structure of IEC/IEEE 82079-1 has been improved substantially, the structure of this implementation guide largely follows the sections of the standard. However, the implementation guide first addresses sections relating to the requirements for information for use itself; aside from some of the principles presented in *section 5*, these are mainly found in the *sections 7 to 9*. Thereafter the implementation guide deals with *sections 6 to 10* of the standard, which cover the information management process.

CHAPTER 11 THE RELATION BETWEEN IEC/IEEE 82079-1 AND PRODUCT OR SECTOR-SPECIFIC STANDARDS deals with the question of how IEC/IEEE 82079-1 can be implemented in parallel with product-specific standards and their requirements concerning information for use. One such pair of standards is dealt with in depth, the parallel implementation of IEC/IEEE 820791 and ISO 20607.

All chapters discussing specific sections of the standard begin with a table of “mandatory requirements” of the respective section of the standard. The subsequent sub-chapters then discuss the requirements and their implementation in detail.

1.6.1 Mandatory requirements and strong recommendations

The mandatory requirements form the major part of the requirements set forth in the standard. The focus of the present implementation guide on these mandatory requirements is meant to reach its objective, which is to help readers get going with implementation of the standard. That does not mean, however, that the strong recommendations of the standard are irrelevant; rather, those recommendations are quasi-requirements, and an organisation should have definite reasons to deviate

from any of them, if it wishes to claim conformity with the requirements of the standard as a whole.

Standards use certain formulations to differentiate the types of requirements. The basis for this are the guidelines of the standardisation organisations. This implementation guide follows these guidelines. Table 1 provides an overview of the formulations used in the standard and this implementation guide.

Table 1: Formulations adapted to ISO/IEC Directives Part 2: 2018, section 7 and DIN 820-2, section 7

Requirements	
shall	is to is required to it is required that has to only ... is permitted it is necessary needs to
shall not	it is not allowed [permitted, acceptable, permissible] is required to be not is required that ... be not is not to be need not do not
Recommendations	
should	it is recommended that ought to
should not	it is not recommended that ought not to
Permissions	
may	is permitted is allowed is permissible
need not	it is not required that no ... is required

1.6.2 Use of the implementation guide

The practical implementation guide is meant as an introduction to the standard, helping to comprehend the normative contents. Since the structure follows that of the standard, it can easily be read together with the standard, helping readers understand its individual sections.

Thanks to its structure being aligned with the standard, the implementation guide is also most suitable as a reference work.

5 Principles

5.1 General

The principles play a central role in the standard, which is readily seen in the following quotation from annex A.2.2 of the standard: “Where fulfilment of a specific requirement is incomplete, but overall the information for use is judged as fulfilling Clauses 8 and 9, the reasons should be explained in the record, referring to the principles in Clause 5.” That is, if detailed requirements of the standard are not fulfilled in their entirety, but the requirements as a whole can be considered fulfilled, fulfilment of the standard can be evidenced by referring to the principles. Thus, the principles in a way are considered superior to the more detailed requirements, and a deviation in some detail is acceptable, as long as the principles are adhered to.

List of requirements based on principles

Subsection	Requirement to be checked	Notes
Adherence to general principles		
5.2.1 General	– Information for use provides the necessary information for the target audiences to make safe, efficient, and effective use of the supported product	
5.2.2 Part of the product	– The information for use has been given the same attention and importance as every other part of the product – The information for use can be clearly and easily identifiable with the supported product.	
5.2.3 Target audience orientation	– The information for use is usable and relevant for the target audiences with respect to their expected tasks and goals	
5.2.4 Safe use	– The information for use promotes the safe operation and maintenance of the supported product	
5.2.5 Product compliance	This section does not contain any requirements, but only a statement	
Principles to be applied to ensure information quality		
5.3.2 Completeness	– The information for use is complete. To ensure this, the information for use must cover the following aspects: ▷ the risks of using the product ▷ the tasks that the target audiences are intended or allowed to perform throughout the life cycle of the supported product ▷ the target audiences' need for information ▷ all legal requirements, including ▷ the contractual requirements	
5.3.3 Minimalism	– Minimalism has been applied to the information for use – Safety-related information has been repeated where needed (as an exception from the minimalism principle)	
5.3.4 Correctness	– The information for use is technically correct – The information for use contains the current information on the supported product	

Subsection	Requirement to be checked	Notes
5.3.5 Conciseness	<ul style="list-style-type: none"> – The information for use is concise with respect to contents, format and media: <ul style="list-style-type: none"> ▷ wording is succinct (short and precise) ▷ illustrations do not contain unnecessary details ▷ videos contain only relevant material 	
5.3.6 Consistency	<ul style="list-style-type: none"> – The information for use is consistent with respect to contents, format and media: 	
5.3.7 Comprehensibility	<ul style="list-style-type: none"> – The information for use is comprehensible for the target audience(s): <ul style="list-style-type: none"> ▷ The text and terminology are comprehensible for the target audience(s) ▷ The illustrations, safety signs and graphical symbols are comprehensible for the target audience(s) ▷ The methods of navigation and use of media are comprehensible for the target audience(s) 	
5.3.8 Accessibility	<ul style="list-style-type: none"> – The information for use is accessible for the target audience(s) in a concrete context of use – The information for use is accessible for the target audience(s) throughout the intended lifetime of the supported product 	
5.4 Use of repeatable processes	This is a process-related requirement, see insertion 5.4 at the end of CHAPTER 6	

5.2 Purpose of information for use

5.2.1 General

To fulfil the requirements of the standard, the information for use must generally contain all necessary information enabling safe, efficient, and effective use of the product.

Safe: The information for use must contain all notes alerting to residual risks, which have been identified in course of risk assessment. For integration of safety notes and warning messages see CHAPTER 7.11.

Efficient: Efficiency is the ratio of the success of work to the effort invested. Information for use must be designed such that the user can successfully use the product with the least possible effort.

Effective: Effectiveness is the ratio of achievement of an objective to the definition of that objective. Thus, information for use must be designed such that the objective achieved matches the objective defined as closely as possible.

To meet these purposes, the information for use must provide the following information types:

- conceptual information: concepts, explanations and descriptions to enable the target audiences to perform tasks by understanding their purpose and the principles of operation of the supported product

- instructional information: procedures and task-oriented step-by-step instructions (regarding structuring also refer to subsection 8.3.4 of the standard and CHAPTER 8.3 of this implementation guide)
- reference information: detailed information on tasks that need to be performed occasionally only. This may include troubleshooting information

5.2.2 Information for use as part of the product

The standard requires that information for use ‘shall be given the same attention and importance as every other part of the product’. Additionally, information for use ‘shall be clearly and easily identifiable with the supported product’ (see CHAPTER 7.2).

5.2.3 Target audiences orientation

The standard requires that information for use ‘shall be usable and relevant for the target audiences with respect to their expected tasks and goals’.

To achieve that, target audience analysis is indispensable (see CHAPTER 6.2.2).

Note:

For additional information on target audience analysis refer to ISO/IEC 26514.

5.2.4 Safe use of the supported product

Safe use of the product is one of the most important principles for fulfilment of the standard.

Information for use must further safe operation/use (see CHAPTER 7.10.7) and safe maintenance (see CHAPTER 7.10.10) and contribute to reducing the risk of injury as well as the risk of inefficient use, malfunctioning, and damaging devices.

For the required contents of the standard refer to CHAPTER 7.

5.2.5 Product compliance through information for use

The standard states that information for use is part of the product. Within the framework of product compliance, information for use is generally relevant for the following areas of legal practice:

- product safety law
- product liability law
- contract law

5.3 Information quality

5.3.1 General

The standard requires that information for use meets the quality criteria completeness, minimalism, correctness, conciseness, consistency, comprehensibility, and accessibility. These requirements are discussed in more detail below.

5.3.2 Completeness

The standard says that to achieve completeness, information for use needs to address the following aspects:

- ‘the risks of using the product’
The respective information can primarily be retrieved from the manufacturer's risk assessment, performed parallel to the development, design, and manufacturing processes.
- all ‘tasks that the target audiences are intended or allowed to perform throughout the life cycle of the supported product’
The respective information can—aside from in the target audience analysis—be found in the risk assessment and/or product analysis of the manufacturer.
- ‘the target audiences' need for information’
- The target audience analysis will contain information on this (see CHAPTER 6.2.2).
- all legal requirements, including contractual requirements

To ensure completeness, the entire organisation should be involved in the research. It is especially recommended to seek the participation of the research and development, design, marketing, and sales departments. It should be noted, that completeness may have safety-related aspects.

With a view to the contractual requirements, it should be checked whether adherence to the standard has been agreed upon, and if so, with which version. If the supplier switches to the newer or national version, the agreement with the customer should be updated accordingly.

5.3.3 Minimalism

According to the standard, information for use must be minimalistic. That is, the authors should refrain from long drawn-out explanations and filler words, as well as from redundancies. Only safety-related information may be repeated.

5.3.4 Correctness

According to the standard, information for use must contain current, technically correct information on the supported product.

To ensure fulfilment of this requirement, the product must be monitored and the information for use must be put under version control reflecting changes to the product.

5.3.5 Conciseness

The standard requires that information for use shall be concise with respect to content, format and media.

The following aspects are considered relevant concerning concise content and presentation:

- wording is succinct (short and precise)
This requirement corresponds to the requirements for minimalism (see CHAPTER 5.3.3) and correctness (see CHAPTER 5.3.4).
- text and illustrations do not contain unnecessary details
- videos contain only relevant material

5.3.6 Consistency

As required by the standard, ‘information for use shall be consistent with respect to the content, format and media’.

As interpreted by the standard, ‘consistency with respect to content means, for example, that the information is unambiguous and correct’ (see CHAPTER 5.3.4). Consistency with respect to format and media particularly means consistent use of terminology (see CHAPTER 7.5), units of measurement (see standards series ISO/IEC 80000), structures and indications (i. e. headings, titles), symbols, warning messages (see CHAPTER 7.11) as well as consistent use of colours (see CHAPTER 9.13).

As recommended by the standard, ‘to achieve consistency, systems for consistent formatting should be separated from systems for consistent content’. Ideally, that means first gathering (consistent) content and then—separately—determining (consistent) formatting.

5.3.7 Comprehensibility

According to the standard, it is expected that the information for use is comprehensible for the target audience(s). To ensure that, the following need to be adapted to the needs of the target audience(s):

- the text and terminology used
- the illustrations, safety signs and graphical symbols
- the methods of navigation and use of media

The (culture-dependent) perception, user habits, and educational level of the target audience(s) must be considered to satisfy their needs.

5.3.8 Accessibility

The standard requires that the information for use 'be accessible (e.g. technically available and legible) for the target audiences in the context of use and throughout the intended lifetime of the supported product'.

To meet this requirement, it should be determined, as part of product observation, how the target audience will interact with the information for use supporting the product.

Note:

When providing information for use on websites, the supplier must develop strategies ensuring that the information for use remains accessible even if the website's address changes. This can be achieved, for instance, by programming redirection links.

5.4 Use of repeatable processes

Use of repeatable processes essentially refers to the information management process and is therefore covered by the reference to CHAPTER 5.4 at the end of chapter 6.

excerpt