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Systems and software engineering — Design and development of information for users

Ingénierie du logiciel et des systèmes — Conception et développement d'informations pour les utilisateurs

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Institute of Electrical and Electronics Engineers, Inc
3 Park Avenue, New York
NY 10016-5997, USA

Email: stds.ipr@ieee.org
Website: www.ieee.org

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO/IEC documents should be noted. This document was drafted in accordance with the rules given in the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

ISO/IEC/IEEE 26514 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Systems and software engineering*, in cooperation with the Systems and Software Engineering Standards Committee of the IEEE Computer Society, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This first edition cancels and replaces ISO/IEC 26514:2008, which has been technically revised.

The main changes are as follows:

— increased emphasis on designing and developing information for users of software;

— use of IEC/IEEE 82079-1 as a normative reference for information for use;

— addition of subclauses regarding application programming interfaces (API) and chatbots.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

Anyone who uses software designed to help users perform particular tasks or handle particular types of problems needs accurate information about how the software helps the user accomplish a task. The information for users may be the first tangible item that the user sees and therefore influences the user's first impressions of the software product. If the information is supplied in a convenient form and is easy to find and understand, the user can quickly become proficient at using the product. Hence, well-designed information for users not only assists the user and helps to reduce the cost of training and support, but also enhances the reputation of the product, its producer, and its suppliers.

Although software developers aim to design user interfaces that behave so intuitively that little separate explanation is needed, this is rarely possible. Today's software offers increasingly robust functionality, not only within applications, but also across applications that intelligently exchange information with one another. Further, most software designs include underlying rules and calculations, or algorithms that affect the results a user can obtain when using the software. Such underlying programming mechanisms are discernible by users, but only through laborious testing. For these reasons and more, information for users remains an essential component of usable software products.

This document supports the need of software users for consistent, complete, accurate, and usable information. It includes both approaches to standardization: a) process standards, which specify the way in which information products are to be developed; and b) information product standards, which specify the characteristics and functional requirements of the information for users.

This document provides specific requirements for information for users of software products, based on the requirements applicable to all types of products in IEC/IEEE 82079-1. It focuses on the parts of the information management processes most applicable for information designers and information developers.

Information for users is often regarded as something done after the software has been implemented. However, for high-quality information for users of a software product, its development should be regarded as an integral part of the software life cycle process. If done properly, information development is a big enough job to require process planning in its own right.

This document was developed to assist users of ISO/IEC/IEEE 12207 to design and develop information for users as part of the software life cycle processes. It defines the information-development process from the information developer's standpoint.

Other documents (ISO/IEC/IEEE 26511, ISO/IEC/IEEE 26512, ISO/IEC/IEEE 26513, ISO/IEC/IEEE 26515, and ISO/IEC/IEEE 26531) address the information management process from the viewpoints of managers, acquirers and suppliers, reviewers and testers, participants in agile development work, and content managers.

In addition to defining a standard process, this document also covers the information product. This document specifies the structure, content, and format for information for users, and also provides informative guidance for the style of such information.

Earlier standards tended to view the results of the information-development process as a single book or multivolume set: a one-time deliverable. Increasingly, information designers recognize that most information for users is now produced from managed re-use of previously developed information (single-source documentation), adapted for new software versions or presentation in various electronic (e.g. onscreen or spoken) and printed media. While this document does not describe how to set up a content management system (CMS), it is applicable for documentation organizations practicing single-source documentation.

This document is independent of the software tools that may be used to produce information for users, and applies to both printed and onscreen information, as well as information presented by other methods such as animation or video. Much of its guidance is applicable to information for users of systems including hardware as well as software.

This document is intended for use in all types of organizations, whether or not a dedicated information-development department is present, and can be used as a basis for local standards and procedures. Readers are assumed to have experience or knowledge of software development or information-development processes.

The order of clauses in this document does not imply that the information for users should be developed in this order or presented to the user in this order.

In each clause, the requirements are media independent, as far as possible. Requirements specific to either print or electronic media are identified as such, particularly in Clause 9.

Systems and software engineering — Design and development of information for users

1 Scope

This document covers the development process for designers and developers of information for users of software. It describes how to establish what information users need, how to determine the way in which that information should be presented, and how to prepare the information and make it available. It is not limited to the design and development stage of the life cycle, but includes information on design throughout the life cycle, such as design strategy and maintaining a design.

This document provides requirements for the structure, information content, and format of information for users of software.

This document can be applied to developing the following types of information, although it does not cover all aspects of them:

— information for users of products other than software;

— multimedia systems using animation, video, and sound;

— computer-based training (CBT) packages and specialized course materials intended primarily for use in formal training programs;

— maintenance information describing the internal operation of systems software;

— information for users incorporated into the user interface itself.

This document is applicable to information architects and information developers, including a variety of specialists:

— information architects who plan the structure and format of information products;

— usability specialists and business analysts who identify the tasks that the intended users can perform with the software;

— developers and editors of the written content of information for users;

— graphic designers with expertise in electronic media;

— user interface designers and ergonomics experts working together to design the presentation of the information on the screen.

This document is also a reference for those with other roles and interests in the process of developing information for users:

— managers of the software development process or the information-development process;

— acquirers of information for users prepared by suppliers;

— usability testers, reviewers of information for users, subject-matter experts;

— developers of tools for creating information for users;

— human-factors experts who identify principles for making information for users more accessible and easily used.

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.

IEC/IEEE 82079-1:2019, *Preparation of information for use (instructions for use) of products – Part 1: Principles and general requirements*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

ISO, IEC, and IEEE maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/

— IEC Electropedia: available at https://www.electropedia.org/

— IEEE Standards Dictionary Online: available at https://dictionary.ieee.org

NOTE For additional terms and definitions in the field of systems and software engineering, see ISO/IEC/IEEE 24765, which is published periodically as a "snapshot" of the SEVOCAB (Systems and software Engineering Vocabulary) database and is publicly accessible at https://www.computer.org/sevocab.

3.1.1
accessibility
extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use

Note 1 to entry: Although "accessibility" typically addresses *users* (3.1.54) who have disabilities, the concept is not limited to disability issues.

[SOURCE: ISO/IEC 25064:2013, 4.1, modified — The original note 1 to entry has been removed and replaced by a new one.]

3.1.2
accuracy
quality of information that it is correct and consistent with a *software product* (3.1.47)

3.1.3
action
element of a *step* (3.1.48) that a *user* (3.1.54) performs during a *procedure* (3.1.39)

3.1.4
active area
<*onscreen information for users* (3.1.36)> area that responds to *user* (3.1.54) control or manipulation

EXAMPLE A hot-spot on a graphic, a hyperlink in text, a button in a screen display.

3.1.5
analysis
investigation and collection task of *development* (3.1.18) that aims to specify types of *users* (3.1.54) and needed information

3.1.6
application programming interface
API
set of *functions* (3.1.23), protocols, parameters, and objects of different formats, used to create *software* (3.1.46) that interfaces with the features or data of an external system or service

EXAMPLE The interface to a suite of service subroutines, a set of dedicated URLs that return data in response, or a suite of *commands* (3.1.11) that can be issued to a physical device such as a robot on an assembly line.

Note 1 to entry: *Information for users* (3.1.29) of an API is of two main types: *reference information* (3.1.43) (which contains information about all elements of the API) and developer guide (which explains how to use the API).

Note 2 to entry: APIs can take several forms. In general terms, an API is a set of clearly defined methods of communication among various components. An API specifies the information and methods that are needed to communicate with another application.

3.1.7
audience
category of *users* (3.1.54) sharing the same or similar characteristics and needs (for example, purpose in using the *information for users* (3.1.29), tasks, education level, abilities, training, and experience) that determine the content, structure, and use of the intended information

Note 1 to entry: There may be different audiences for information for users (for example, management, data entry, maintenance, engineering, business professionals).

[SOURCE: ISO/IEC/IEEE 23026:2015, 4.2, modified — "documentation" has been replaced by "information for users"; in note 1 to entry, "engineering, business professionals" has been added.]

3.1.8
caution
advisory information that states that performing some *action* (3.1.3) can result in minor or moderate injury or lead to consequences that are unwanted or undefined, such as loss of data or an equipment problem

Note 1 to entry: See also *danger* (3.1.16) and *warning* (3.1.56).

3.1.9
change control
actions (3.1.3) taken to identify, document, review, and authorize changes to a product that is being developed

Note 1 to entry: The *procedures* (3.1.39) confirm the validity of changes, that the effects on other items are examined, and that those people concerned with the *development* (3.1.18) are notified of the changes.

3.1.10
computer-aided design
CAD
use of a computer to design a device or a system, display it on a computer monitor or printer, simulate its operation, and provide statistics on its performance

3.1.11
command
expression that can be input to a computer system to initiate an *action* (3.1.3) or affect the execution of a computer program

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.638, modified — The EXAMPLE has been removed.]

3.1.12
conceptual information
explanations and descriptions which enable the *audience* (3.1.7) to understand the product's operating principles in order to perform required tasks

3.1.13
configuration management
CM
technical and organizational activities, comprising configuration identification, control, status accounting and auditing

[SOURCE: IEEE 828-2012]

3.1.14
context-sensitive help
type of *onscreen information for users* (3.1.36) in which the material that is displayed depends upon the current status of the *software* (3.1.46) and the progress of the *user's* (3.1.54) task

3.1.15
customize
adapt a *software* (3.1.46) or information product to the needs of a particular *audience* (3.1.7)

3.1.16
danger
hazardous situation, which if not avoided, can result in death or serious injury

Note 1 to entry: See also *caution* (3.1.8) and *warning* (3.1.56).

[SOURCE: ISO/IEC/IEEE 26513:2017, 3.8]

3.1.17
design
stage of information *development* (3.1.18) that is concerned with determining what *information for users* (3.1.29) is to be provided in a product and what is the nature of that information

3.1.18
development
activity of preparing *information for users* (3.1.29) after it has been designed

3.1.19
document
uniquely identified unit of information for human use

[SOURCE: ISO/IEC/IEEE 15289:2019, 3.1.10, modified — The EXAMPLE and note 1 to entry have been removed.]

3.1.20
document set
documentation (3.1.21) that has been segmented into separately identified volumes or products for ease of distribution or use

[SOURCE: ISO/IEC/IEEE 26513:2017, 3.11, modified — "collection of" has been removed.]

3.1.21
documentation
collection of documents related to a given subject

[SOURCE: IEC/IEEE 82079-1:2019, 3.11]

3.1.22
embedded information for users
information for users (3.1.29) that is accessed as an integral part of *software* (3.1.46)

EXAMPLE Pop-up help and help text on a screen.

Note 1 to entry: See also *onscreen information for users* (3.1.36) and *printed information for users* (3.1.38).

3.1.23
function
defined objective or characteristic *action* (3.1.3) of a system or component

3.1.24
icon
graphic displayed on the screen that represents a *function* (3.1.23)

[SOURCE: ISO/IEC 11581-1:2000, 4.7, modified — "of a visual display" and "of the computer system" have been removed.]

3.1.25
illustration
graphic element set apart from the main body of text and normally cited within the main text

Note 1 to entry: The term "illustration" is used as the generic term for tables, figures, exhibits, screen captures, flow charts, diagrams, drawings, *icons* (3.1.24), and other types of graphics.

3.1.26
information architect
person who develops the structure of an information space and the semantics for accessing information on tasks, system *functions* (3.1.23) and features, and other information

[SOURCE: ISO/IEC/IEEE 26513:2017, 3.20, modified — "required task objects, system objects" has been replaced by "information on tasks, system functions and features".]

3.1.27
information architecture
structure of an information space and the semantics for accessing information on tasks, system *functions* (3.1.23) and features, and other information

3.1.28
information developer
person who prepares content for *information for users* (3.1.29)

[SOURCE: ISO/IEC/IEEE 26515:2018, 3.8]

3.1.29
information for users
information provided by the supplier that provides the target audience with concepts, *procedures* (3.1.39) and reference material for the safe, effective, and efficient use of a supported product during its life cycle

EXAMPLE Printed manuals, onscreen information, and stand-alone online help are examples of information for users.

Note 1 to entry: Throughout this document, the term "information for users" refers to information for *users* (3.1.54) of *software* (3.1.46).

Note 2 to entry: It can be provided separately or embedded in the product or both.

Note 3 to entry: The term "information for users" in this document is intended as a synonym for "information for use" as used in IEC/IEEE 82079-1 and is defined as such, although it is recognised that the respective ideas, while similar, are not identical.

[SOURCE: IEC/IEEE 82079-1:2019, 3.17, modified — The preferred term has been changed from "information for use" to "information for users"; the admitted term "instructions for use" has been removed; the original EXAMPLE and notes to entry have been removed and replaced by new ones.]

3.1.30
instructional information
information that explains how to use a product, system, or service to perform tasks

3.1.31
internationalization
process (3.1.40) of developing information so that it is suitable for an international *audience* (3.1.7)

Note 1 to entry: See also *localization* (3.1.32).

3.1.32
localization
creation of a national or specific regional version of a product and its *information for users* (3.1.29)

Note 1 to entry: Localization may be carried out separately from the translation *process* (3.1.40).

Note 2 to entry: See also *internationalization* (3.1.31).

3.1.33
menu
list displayed on a screen showing available *functions* (3.1.23) from which the *user* (3.1.54) can select an *action* (3.1.3) to be initiated

3.1.34
minimalism
principle that *information for users* (3.1.29) includes critical information and the least amount of other information needed to be complete

[SOURCE: IEC/IEEE 82079-1:2019, 3.25, modified — "information for use" has been replaced by "information for users".]

3.1.35
navigation
act of accessing *information for users* (3.1.29) and viewing different *topics* (3.1.51)

3.1.36
onscreen information for users
information for users (3.1.29) that is intended to be read on the screen by the *user* (3.1.54) while using the *software* (3.1.46)

EXAMPLE Pop-up help and help text on a screen.

Note 1 to entry: See also *embedded information for users* (3.1.22) and *printed information for users* (3.1.38).

3.1.37
picture
illustration (3.1.25) that shows the actual appearance of physical objects

EXAMPLE Photographs and drawings.

3.1.38
printed information for users
information for users (3.1.29) that is either provided in printed form, or provided in electronic form for the customer or *user* (3.1.54) to print

Note 1 to entry: See also *embedded information for users* (3.1.22) and *onscreen information for users* (3.1.36).

3.1.39
procedure
ordered series of *steps* (3.1.48) that specify how to perform a task

3.1.40
process
set of interrelated or interacting activities which transforms inputs into outputs

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.33]

3.1.41
project
endeavour with defined start and finish criteria undertaken to create a product or service in accordance with specified resources and requirements

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.37, modified — Note 1 to entry has been removed.]

3.1.42
project manager
person with overall responsibility for the management and running of a *project* (3.1.41)

3.1.43
reference information
information that is intended to provide quick access to specific details for *users* (3.1.54) who are generally familiar with the product's *functions* (3.1.23)

3.1.44
secondary window
window (3.1.57) that contains information that depends on information in another window (the primary window)

Note 1 to entry: The information in the secondary window supplements the information in the primary window.

3.1.45
signpost
text, symbol, or small graphic that helps the *user* (3.1.54) identify where particular types of information are located or where the information in the current display fits into the *information for users* (3.1.29) as a whole

Note 1 to entry: Information of different types may be indicated by symbols or graphics of different types.

3.1.46
software
all or part of the programs which *process* (3.1.40) or support the processing of digital information

Note 1 to entry: For the purposes of this document, the term "software" does not include *onscreen information for users* (3.1.36).

[SOURCE: ISO/IEC 19770-1:2017, 3.49, modified — The original notes 1 and 2 to entry have been replaced by a new note 1 to entry.]

3.1.47
software product
set of computer programs, *procedures* (3.1.39), and possibly associated *information for users* (3.1.29) and data

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.54, modified — Note 1 to entry has been removed.]

3.1.48
step
element (numbered list item) in a *procedure* (3.1.39) that tells a *user* (3.1.54) to perform an *action* (3.1.3) (or actions)

Note 1 to entry: Responses by the *software* (3.1.46) are not considered to be steps.

3.1.49
style
set of language-specific editorial conventions covering grammar, terminology, punctuation, capitalization, and word choice