INTERNATIONAL STANDARD

**ISO/IEC 25063**

First edition
2014-03-15

# Systems and software engineering — Systems and software product Quality Requirements and Evaluation (SQuaRE) — Common Industry Format (CIF) for usability: Context of use description

*Ingénierie des systèmes et du logiciel — Exigences de qualité et évaluation des systèmes et du logiciel (SQuaRE) — Format industriel commun (CIF) pour l'utilisabilité: Description du contexte d'utilisation*



Reference number
ISO/IEC 25063:2014(E)



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

Published in Switzerland

# Contents

Page

# Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national 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/IEC 25063 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*, in collaboration with Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.



 

# Introduction

The human-centred design approach of ISO 9241-210[4] is well established and focuses specifically on making systems usable. Usability can be achieved by applying human-centred design and testing throughout the life cycle. In order to enable a human-centred approach to be adopted, it is important that all the relevant types of information related to usability (information items) are identified and communicated. This identification and communication enables the usability of a system to be designed and tested.

This International Standard provides a framework and consistent terminology for describing the context of use of an interactive system. It is intended to assist developers in documenting and communicating usability-related information through the system development life cycle.

The Common Industry Format (CIF) for Usability family of International Standards is described in ISO/IEC TR 25060[19] and is part of the SQuaRE series (ISO/IEC 25000[17] to ISO/IEC 25099) of standards on systems and software product quality requirements and evaluation.

The CIF family of standards uses definitions that are consistent with the ISO 9241 series of standards (Ergonomics of human system interaction), as this is the terminology that is normally used for this subject matter.

CIF standards are planned for the following information items:

— Context of use description (ISO/IEC 25063);

— User needs report (ISO/IEC 25064);

— User requirements specification (planned ISO/IEC 25065);

— User interaction specification;

— User interface specification;

— Evaluation report (planned ISO/IEC 25066);

— Field data report.



The CIF standards are part of the “Extension Division” of the ISO/IEC 25000 “SQuaRE” series of International Standards (see Figure 1).

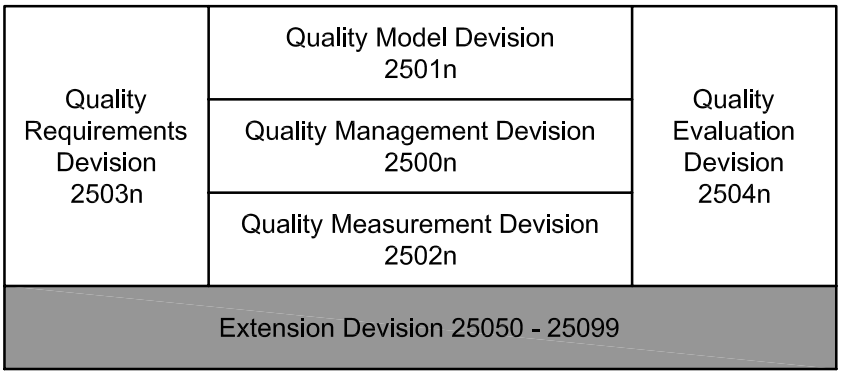


**Figure 1 — Organization of SQuaRE series of International Standards**

Context of use is defined in ISO 9241-11.[2] The system quality model in ISO/IEC 25010[18] incorporates context of use.

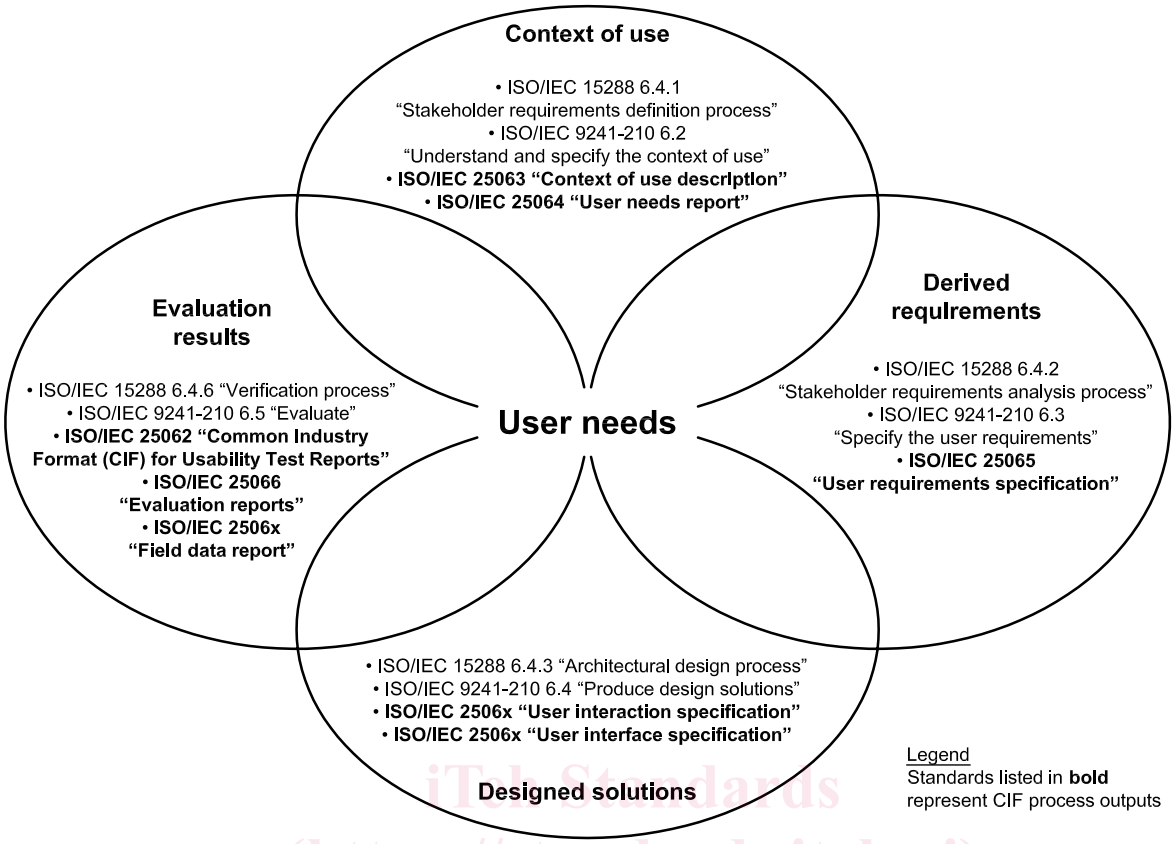




**Figure 2 — Relationship of CIF documents to user centred design in ISO 9241-210[4] and system life cycle processes in ISO/IEC 15288[7]**

Figure 2 illustrates the interdependence of these information items with the human-centred design activities described in ISO 9241-210[4] as well as the corresponding System Life Cycle processes described in ISO/IEC 15288.[7] The figure depicts the activities as a set of intersecting areas. The circles overlap to represent that the activities are not separate, but rather, overlapping in time and scope and the outcome of each activity provides the input to one or more other activities. As each human-centred design activity can provide input to any other, there is no starting point, no end point, or linear process intended.

Human-centred design relies on user needs that are first identified based on the Context of Use analysis. User needs are documented in the User Needs Report (ISO/IEC 25064), which is an intermediate deliverable that links the Context of Use Description (ISO/IEC 25063) that contains Information about the users, their tasks and the organizational and physical environment, to the user requirements. These items are developed during the Stakeholders Requirements Definition Process described in ISO/IEC 15288.[7]

The "Produce design solutions" activity focuses on designing user interaction that meets user requirements. This activity takes place during the Architectural Design, Implementation, and Integration processes described in ISO/IEC 15288[7] and produces the information items "User Interaction Specification" and the "User Interface Specification".

The "Evaluate" activity starts at the earliest stages in the project, evaluating design concepts to obtain a better understanding of the user needs. Design solutions can be evaluated multiple times as the interactive system is being developed, and can produce various types of evaluation report, and usability data such as that described in ISO/IEC 25062[20] can support the ISO/IEC 15288[7] validation process that confirms that the system complies with the stakeholder requirements.

 

# Systems and software engineering — Systems and software product Quality Requirements and Evaluation (SQuaRE) — Common Industry Format (CIF) for usability: Context of use description

## 1 Scope

This International Standard specifies the contents of both high-level and detailed descriptions of context of use for an existing, intended, designed or implemented system, product or service.

The context of use description is applicable to software and hardware systems, products or services (excluding generic products, such as a display screen or keyboard). The description of the context of use is intended to be used as part of system-level documentation resulting from development processes such as those in ISO 9241-210 and ISO/IEC JTC 1/SC 7 process standards.

This International Standard does not prescribe any kind of method, life cycle or process.

The context of use information item can be integrated into any type of process model.

NOTE For the purpose of establishing process models, ISO/IEC TR 24774[16] and ISO/IEC 15504-2[9] specify the format and conformance requirements for process models, respectively. In addition, ISO/IEC 15289[8] defines the types and content of information items developed and used in process models for system and software life cycle management. ISO/IEC 15504-5[10] and ISO/IEC 15504-6[11] define work products, including information items, for the purpose of process capability assessment. Process models and associated information items for human-centred design of interactive systems are contained in ISO/TR 18529[13] and ISO/TS 18152[12], respectively.

This International Standard also describes the purposes for which context of use descriptions are used, and identifies the intended users of context of use descriptions.

While this International Standard specifies the required content elements of a context of use description, it does not prescribe any particular structure or layout for documenting the context of use.

## 2 Conformance

A description of the context of use conforms to this International Standard if it contains all the required elements specified in Clause 5.

## 3 Terms and definitions

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

**3.1**
**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: Context of use includes direct use or use supported by assistive technologies.

[SOURCE: ISO 26800:2011, 2.1]

**3.2**
**context of use**
users, tasks, equipment (hardware, software and materials), and the physical and social environments in which a system, product or service is used

[SOURCE: ISO 9241-11:1998, 3.5, modified — In the definition, "product" has been replaced by "system, product or service".]

Note 1 to entry: In this International Standard, equipment is described as part of the technical and technological environment.

**3.3**
**effectiveness**
accuracy and completeness with which users achieve specified goals

[SOURCE: ISO 9241-11:1998, 3.2]

**3.4**
**efficiency**
resources expended in relation to the accuracy and completeness with which users achieve goals

[SOURCE: ISO 9241-11:1998, 3.3]

**3.5**
**goal**
intended outcome

[SOURCE: ISO 9241-11:1998, 3.8]



**3.6**
**human-centred design**
approach to system design and development that aims to make interactive systems more usable by focusing on the use of the system; applying human factors, ergonomics and usability knowledge and techniques

Note 1 to entry: The term "human-centred design" is used rather than "user-centred design" in order to emphasize that this standard also addresses impacts on a number of stakeholders, not just those typically considered as users. However, in practice, these terms are often used synonymously.

Note 2 to entry: Usable systems can provide a number of benefits including improved productivity, enhanced user wellbeing, avoidance of stress, increased accessibility, and reduced risk of harm.

[SOURCE: ISO 9241-210:2010, 2.7]

**3.7**
**information item**
separately identifiable body of information that is produced and stored for human use during a system or software life cycle

[SOURCE: ISO/IEC 15289:2006, 5.11]

**3.8**
**interactive system**
combination of hardware, software and/or services that receives input from and communicates output to users

Note 1 to entry: This includes, where appropriate, packaging, branding, user documentation, online help, support and training.

[SOURCE: ISO 9241-210:2010, 2.8]

**3.9**
**persona**
representation of a type of user that includes a concise summary of the characteristics of the user that is most informative to the design or illustrative of specific user requirements

Note 1 to entry: A persona typically includes behaviour patterns, goals, skills, attitudes, and environment, with a few fictional personal details to make the persona a realistic character.

**3.10**
**requirement**
condition or capability that must be met or possessed by a system, system component, product, or service to satisfy an agreement, standard, specification, or other formally imposed documents

Note 1 to entry: Requirements include the quantified and documented needs, wants, and expectations of the sponsor, customer, and other stakeholders.

[SOURCE: ISO/IEC/IEEE 24765:2010, 3.2506]

**3.11**
**satisfaction**
freedom from discomfort, and positive attitudes towards the use of the product

[SOURCE: ISO 9241-11:1998, 3.4]

**3.12**
**stakeholder**
individual or organization having a right, share, claim, or interest in a system or in its possession of characteristics that meet their needs and expectations

[SOURCE: ISO/IEC 15288:2008, 4.29]

**3.13**
**system**
combination of interacting elements organized to achieve one or more stated purposes

Note 1 to entry: A system may be considered as a product or as the services it provides.

Note 2 to entry: In practice, the interpretation of its meaning is frequently clarified by the use of an associative noun, e.g. aircraft system. Alternatively the word system may be substituted simply by a context-dependent synonym, e.g. aircraft, though this may then obscure a system principles perspective.

[SOURCE: ISO/IEC 15288:2008, 4.31]

**3.14**
**task**
activities required to achieve a goal

[SOURCE: ISO 9241-11:1998, 3.9]

**3.15**
**usability**
extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use

[SOURCE: ISO 9241-210, 2.13]

**3.16**
**user**
person who interacts with a system, product or service

Note 1 to entry: A person who uses the output or service provided by a system. For example, a bank customer who visits a branch, receives a paper statement, or carries out telephone banking using a call centre can be considered a user.

[SOURCE: ISO 26800:2011, 2.10]

**3.17**
**user experience**
person's perceptions and responses that result from the use and/or anticipated use of a product, system or service

Note 1 to entry: User experience includes all the users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours and accomplishments that occur before, during and after use.

Note 2 to entry: User experience is a consequence of brand image, presentation, functionality, system performance, interactive behaviour, and assistive capabilities of the interactive system; the user's internal and physical state resulting from prior experiences, attitudes, skills and personality; and the context of use.

Note 3 to entry: Usability, when interpreted from the perspective of the users' personal goals, can include the kind of perceptual and emotional aspects typically associated with user experience. Usability criteria can be established so as to assess aspects of user experience.

[SOURCE: ISO 9241-210:2010, 2.15]

**3.18**
**user interface**
all components of an interactive system (software or hardware) that provide information and controls for the user to accomplish specific tasks with the interactive system

[SOURCE: ISO 9241-110:2006, 3.9]

**3.19**
**user need**
prerequisite identified as necessary for a user, or a set of users, to achieve an intended outcome, implied or stated within a specific context of use

[SOURCE: ISO/IEC 25064:2013, 4.19]

**3.20**
**user requirements**
usage requirements
requirements for use that provide the basis for design and evaluation of interactive systems to meet identified user needs

Note 1 to entry: User requirements are derived from user needs and capabilities in order to make use of the system in an effective, efficient, safe and satisfying manner.

Note 2 to entry: User requirements specify the extent to which user needs and capabilities are to be met when using the system. They are not requirements on the users.

Note 3 to entry: In software-engineering terms, user requirements comprise both "functional" and "non-functional" requirements based on user needs and capabilities.

[SOURCE: ISO/IEC TR 25060:2010, 2.21]

## 4 Purposes and types of context of use descriptions

### 4.1 General

The description of the context of use provides common information that is needed for use in conjunction with the other information items that are to be produced relating to human centred design. Information about the context of use provides a basis for designing a product that is usable in the intended context of use, and helps maintain a human-centred design focus within the project.



 

Context of use information can be captured in a variety of forms, and descriptions of the context of use can be formatted to meet the needs of particular audiences.

EXAMPLE 1 Sources of context of use information include:

— Documentation of conducted interviews with users.

— Documentation of observations of users in their real environment.

— Diaries completed by users over a period of time describing their real context of use.

— Documentation of conducted observations of users.

— Documentation of user performance measurements.

— Video files of individual users showing them in their real environment.

EXAMPLE 2 Examples of different representations that can be used to describe the context of use (or parts of the context of use) include:

— Complete descriptions of users, tasks, equipment (hardware, software and materials), and the physical and social environments that constitute a detailed context of use description using a structured format (such as Annex C).

— Narrative descriptions of the context of use (referred to as “scenarios of use”, “context scenarios”, “as is” scenarios or “problem scenarios”) for each user group, typically based on user interviews.

— Descriptions of users in terms of personas, which represent a type of user by providing a concise summary of characteristics of an instance of a user, and can include issues such as goals, tasks, skills, attitudes, and environmental conditions.



The most common types of context of use descriptions are listed below, described in more detail in the sub-clauses indicated. Depending on the particular design and development situation it could be necessary to describe some or all of these.



4.2 Initial outline of the context of use

4.3 Detailed context of use descriptions

4.3.1 Current context of use

4.3.2 Intended context of use

4.3.3 Context of use specified as a part of user requirements

4.3.4 Context of use of the implemented system, product or service

4.3.5 Context of use of the deployed system, product or service

4.4 Context of use for an evaluation

4.5 Context of use as part of a system, product or service description

The potential users of each type of context of use description are listed in Annex B.

A context of use description should be treated as an evolving repository of information. The content of the description will grow as an increasing amount of detail is added in the course of the design process.

NOTE Information about a particular context of use can be used in the development of more than one interactive system.

## 4.2 Initial outline of the context of use

An initial description of the context of use can be based on the assumptions of the project (often derived from the business case). At this stage it will not be complete, although some aspects, such as the potential users, will be known. For more details, see Annex A.

## 4.3 Detailed context of use descriptions

### 4.3.1 Current context of use

Analysis of the context of use of existing or similar systems, products or services (including manual systems if appropriate) can provide information on a whole range of context issues including deficiencies and baseline levels of performance and satisfaction. Information about the current context of use can be used to identify needs, problems and constraints that might otherwise be overlooked, but which design of the future system should take account of.

NOTE 1 Some aspects of the current context will persist, even if the system is highly novel.

NOTE 2 If a product concept is available or an existing product (such as a predecessor or a competitive product) is used as the reference point for a new design, information in the current context of use will provide an outline of the goals of the users of such a product, their tasks and the way in which the tasks are to be performed that will be relevant for the intended context of use.

### 4.3.2 Intended context of use

The purpose of this description of the context of use is to provide a basis for designing the system, product or service for the types of users who are intended to use it, the tasks that are to be undertaken and the environment(s) in which it is intended to be used. It will incorporate the relevant aspects of the existing context of use, if there is one.

The intended context of use of a system, product or service might include changes to the current context of use.

EXAMPLE 1 A manufacturer of monitoring equipment, which is currently used by medical practitioners in clinical settings, wishes to respond to the increasing demand for monitoring equipment that can be used by patients, and their carers, in their own homes.

The context of use description should differentiate those components of the context of use that will remain fixed and those components of the context of use that can be subject to change.

EXAMPLE 2 When designing an interactive whiteboard for a primary school, the teaching room is part of the given technical environment, that can't be changed. When designing a whole teaching room, the teaching room can be designed in conjunction with the interactive whiteboard.

EXAMPLE 3 When designing a universal remote control, the products to be remote-controlled are part of the given technical environment, that can't be changed. When designing a remote control as part of a specific product, the remote control is part of the system to be designed.

NOTE The intended context of use will be refined iteratively, taking account of an evolving understanding of user and business needs and practical constraints including the development time and budget, until a realistic range of user types and characteristics, environmental characteristics and tasks can be specified as part of user requirements for which the system is required to achieve specified levels of usability.

### 4.3.3 Context of use specified as a part of user requirements

The context of use should be specified as a part of the user requirements specification to clearly identify the conditions under which the requirements apply. Each relevant user, task and environmental characteristic needs to be identified in order that the full range of contextual issues can be taken into account in design.



 