



BSI Standards Publication

Ergonomics of human-system interaction

Part 220: Processes for enabling, executing and assessing
human-centred design within organizations

National foreword

This British Standard is the UK implementation of EN ISO 9241-220:2019. It is identical to [ISO 9241-220:2019](#).

The UK participation in its preparation was entrusted to Technical Committee PH/9, Applied ergonomics.

A list of organizations represented on this committee can be obtained on request to its secretary.

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**Ergonomics of human-system interaction - Part 220:
Processes for enabling, executing and assessing human-
centred design within organizations (ISO 9241-220:2019)**

Ergonomie de l'interaction homme-système
- Partie 220: Processus de validation,
d'exécution et d'évaluation de la conception
centrée sur l'opérateur humain au sein des
organisations (ISO 9241-220:2019)

Ergonomie der Mensch-System-Interaktion - Teil
220: Prozesse zur Ermöglichung, Durchführung
und Bewertung menschenzentrierter Gestaltung
für interaktive Systeme in Hersteller- und
Betreiberorganisationen (ISO 9241-220:2019)

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European foreword

This document (EN ISO 9241-220:2019) has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with Technical Committee CEN/TC 122 "Ergonomics" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of [ISO 9241-220:2019](#) has been approved by CEN as EN ISO 9241-220:2019 without any modification.

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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.

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 documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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.

This document was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human–system interaction*.

This first edition of [ISO 9241-220](http://www.iso.org/iso/9241-220) cancels and replaces ISO/TR 18529:2000.

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.

Introduction

This document describes processes that represent good practice for human-centred design within and across projects. Human-centred design is an approach to system design and development that aims to improve usability, accessibility and user experience and avoid harm from use, by focussing on the use of the system.

The primary intended users of this document are professionals responsible for institutionalising human-centred design in an organization, who need to specify, assess and improve human-centred design in the organization. This application needs the clear and consistent structure that is provided by process definitions, as described in [ISO/IEC TR 24774](#). For an introduction to human-centred design, see [ISO 9241-210](#) (described below).

Process models were developed to provide:

- the potential to analyse the ability of an organization to deliver and/or maintain a system that meets a required level of performance and quality;
- a description of the factors that hinder this ability; and
- a means of addressing such shortcomings and mitigating associated risks of adverse consequences.

These have led to the widespread adoption of process modelling and assessment as an element in the assurance of timely and effective system delivery. Processes are defined at the level of **what** is done to develop and operate a system or organization.

The processes in this document represent good practice in human-centred design from a range of industries. They are described from the perspective of those who analyse, design and evaluate the human use of interactive systems. This includes associated requirements for project management and top management support for human-centred design.

This document uses the same structured format as other International Standards for process models (such as [ISO/IEC/IEEE 12207](#) and [ISO/IEC/IEEE 15288](#)). [ISO/IEC/IEEE 12207](#) refers to this document for information on human-centred design and usability.

Human-centred design aims to achieve required levels of human-centred quality. In this document, human-centred quality is the collective term used to refer to usability, accessibility, user experience, and avoidance of harm from use (see [Annex E](#)).

This document can be used to:

- implement human-centred design as part of a system development or procurement process and/or support life cycle;
- assess an enterprise's existing capability to carry out the human-centred processes;
- improve the application of human-centred design as part of an existing system development process;
- develop competence in human-centred design.

For executives/top management, this document gives guidance on governance in the area of human-centred quality. Use of this guidance gives confidence that interactive systems developed and used by an organization are usable and accessible.

For managers, this document facilitates integration of human-centred design into the system life cycle and quality management system. Human-centred activities can be specified, assessed and improved as required for projects.

This document enables efficient interaction between human-centred design and other disciplines. The services and information that human-centred design staff provide to projects are defined so that their value and purpose can be understood.

Relationship to ISO 9241-210

[ISO 9241-210](#) describes the principles of a human-centred approach and the activities necessary for human-centred design of an interactive system. Conformance is achieved by carrying out all the required activities and those recommended activities that are identified as being relevant. [ISO 9241-210](#) describes HCD activities in less detail than this document and can be used to provide an overview of a project's basic capabilities in human-centred design.

This document extends the model in [ISO 9241-210](#), and elaborates the principles and activities as structured processes with defined outcomes for the execution of human-centred design within a project.

[Annex C](#) identifies the specific aspects of the processes in this document that are associated with the requirements and recommendations in [ISO 9241-210](#) by mapping between them. Application of relevant HCD processes as described in document can be used as a means of showing conformance to [ISO 9241-210](#). The extra detail can provide a basis for organizational improvements in human-centred design where any non-compliances are identified.

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Ergonomics of human-system interaction —

Part 220:

Processes for enabling, executing and assessing human-centred design within organizations

1 Scope

This document describes the processes and specifies the outcomes by which human-centred design (HCD) is carried out within organizations. Human-centred design aims to meet requirements for human-centred quality (see [Annex E](#)) throughout the life cycle of interactive systems. The processes are described from the viewpoint of those responsible for the analysis, design and evaluation of the human use of interactive systems. The process descriptions include the purpose, benefits, outcomes, typical activities and work products for each process, and are for use in the specification, implementation, assessment and improvement of the activities used for human-centred design and operation in any type of system life cycle. They can also provide the basis for professional development and certification.

The processes are associated with the domains of ergonomics/human factors, human-computer interaction, usability and user experience. This document does not include specific methods for human-centred design, nor does it describe processes for organizational redesign.

The scope of this document does not include other aspects of ergonomics, which include the design of organizations as well as systems for human use, and which extend beyond the domain of design; for example in the forensic analysis of the causes of accidents and in the generation of data and methods of measurement.

NOTE 1 [ISO/TS 18152](#) is a related standard with a broader scope than this document. It includes the organizational processes for the identification and handling of issues related to both users and other stakeholders.

The intended application of this document is computer-based interactive systems. While the processes apply to interactive systems that deliver services, they do not cover the design of those services. The relevant aspects of the processes can also be applied to simple or non-computer-based interactive systems.

NOTE 2 Human-centred design concentrates on the human-centred aspects of design and not on other aspects of design such as mechanical construction, programming or the basic design of services.

The process descriptions in this document provide the basis for a rigorous assessment of an enterprise's capability to carry out human-centred processes in compliance with the ISO/IEC 33000 family of standards.

This document is intended for use by organizations that want to address and improve their treatment of human-centred design of either their internal systems or the products and services they provide, and the procurement of systems and parts of systems. The processes can be applied by small- and medium-sized enterprises as well as by large organizations.

Copyright release for the process descriptions

Users of this document may freely reproduce the process descriptions contained in [Clause 9](#) as part of any process assessment model, or as part of any demonstration of compatibility with this document, so that it can be used for its intended purpose.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

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 user needs, characteristics and capabilities to achieve identified goals in identified contexts of use

Note 1 to entry: Context of use includes direct use or use supported by assistive technologies.

[SOURCE: ISO 9241-112:2017, 3.15]

3.2 context of use

combination of users, goals and tasks, resources, and environment

Note 1 to entry: The “environment” in a context of use includes the technical, physical, social, cultural and organizational environments.

Note 2 to entry: This can apply to an existing context of use or an intended context of use.

[SOURCE: ISO 9241-11:2018, 3.1.15, modified — Note 2 to entry has been added.]

3.3 decomposition

breaking of a complex problem or system into smaller parts that are more manageable and easier to understand

3.4 effectiveness

accuracy and completeness with which users achieve specified goals

[SOURCE: ISO 9241-11:2018, 3.1.12]

3.5 efficiency

resources used in relation to the results achieved

Note 1 to entry: Typical resources include time, human effort, costs and materials.

[SOURCE: ISO 9241-11:2018, 3.1.13]

3.6 enterprise

that part of an organization with responsibility to acquire and to supply products and/or services according to agreements

Note 1 to entry: An organization may be involved in several enterprises, and an enterprise may involve one or more organizations.

[SOURCE: ISO/TS 18152:2010, 4.4]

3.7

ergonomics

human factors

scientific discipline concerned with the understanding of interactions among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance

[SOURCE: ISO 26800:2011, 2.2, modified — The Note has been omitted.]

3.8

evaluation

systematic determination of the extent to which an entity meets its specified criteria

[SOURCE: ISO/IEC 25041:2012]

3.9

goal

intended outcome

[SOURCE: ISO 9241-11:2018, 3.1.10]

3.10

harm from use

negative consequences regarding health, safety, finances or the environment that result from use of the system

Note 1 to entry: The negative consequences can be for the user or for any other stakeholder.

Note 2 to entry: Although avoidance of harm from use, i.e. eliminating any exposure of risk that poses a potential harm, cannot be achieved completely, designing an interactive system can aim at mitigating risks to an acceptable minimum (see [Annex E](#)).

[SOURCE: ISO 9241-11:2018, 3.2.4, modified — Note 2 to entry has been added.]

3.11

human-centred design

HCD

approach to system design and development that aims to make interactive systems more usable by focussing 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 document 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: The objectives of human-centred design include identification of the technical functionality that is a prerequisite for human-centred quality.

Note 3 to entry: In this document, “human-centred design” is used as a noun phrase, and “HCD” as an adjective phrase.

[SOURCE: ISO 9241-210:2010, 2.7, modified — Note 2 to entry has been replaced and Note 3 to entry has been added.]

3.12

human-centred quality

extent to which requirements for usability, accessibility, user experience and avoidance of harm from use are met

Note 1 to entry: Provision of the necessary technical functionality is a prerequisite for human-centred quality.

Note 2 to entry: Usability, accessibility, user experience and avoidance of harm from use can only be managed to the extent that they can be controlled by designed aspects of the interactive system.

Note 3 to entry: Human-centred quality is a collective term for the intended outcomes of interaction of the user with the system.

3.13

human-centred quality objective

objective for the design of an interactive system facilitating achievement of intended outcomes with appropriate usability, accessibility, user experience and avoidance of harm from use arising from the use of the system

Note 1 to entry: Human-centred quality objectives are statements of outcomes to be achieved for the users of the system in general. They are often provided by the sponsor of the system taking the perspective of its future users.

3.14

human factors data

information about humans and human behaviour

Note 1 to entry: This includes existing knowledge or new user related research. For example, anthropometric data, health and safety data, psychometric measurements, ergonomics standards, accessibility standards, and expert knowledge in human sciences (e.g. psychology, sociology, medicine, human computer interaction, behavioural science, anthropology, management science, education, personnel and staffing management), and codifications of this information and knowledge (e.g. international standards, legislative requirements, existing patents, good practice, style guides and project standards) as appropriate.

3.15

inspection-based evaluation

evaluation based on the judgment of one or more evaluator(s) who examine or use a system to identify potential usability problems and/or deviations from established criteria

Note 1 to entry: Established criteria typically include user requirements, usability guidelines in standards, design conventions contained in manufacturer guidelines and style guides, task models to be supported as well as standardized principles.

Note 2 to entry: Inspection-based evaluation is a generic term for methods that include, but are not limited to, heuristic evaluation, cognitive walkthroughs, standards inspection, pluralistic walkthroughs, and consistency inspections.

[SOURCE: ISO/IEC 25066:2016, 3.10, modified — Notes to entry 1, 3 and 5 were deleted and the remaining Notes renumbered.]

3.16

interaction object

<interactive system> control or component (including information) assisting the user in achieving specified goals using an interactive system

3.17

interactive system

combination of hardware and/or software and/or services and/or people that users interact with in order to achieve specific goals

Note 1 to entry: This includes, where appropriate, packaging, user documentation, on-line and human help, support and training.

[SOURCE: ISO 9241-11:2018, 3.1.5]

3.18

life cycle

evolution of a system, product, service, project or other human-made entity from conception through retirement

[SOURCE: ISO/IEC/IEEE 15288:2015, 4.1.23]

3.19

process

set of interrelated or interacting activities that use inputs to deliver an intended result

[SOURCE: ISO 9000:2015, 3.4.1]

3.20

process activity

activity that, when consistently performed, contributes to achieving a specific process purpose

Note 1 to entry: In [ISO/IEC 33001:2015](#) this is called a base practice.

Note 2 to entry: For some process activities, the need for the performance of the activity will depend on the project context.

3.21

process assessment

disciplined evaluation of an organization's processes against a process assessment model

[SOURCE: ISO/IEC 33001:2015, 3.2.15]

3.22

process benefit

positive achievement from the execution of a process

Note 1 to entry: Benefits are often spread broadly across the business and not necessarily related to the technical or business intent of executing a process.

Note 2 to entry: A benefit can provide the motivation to execute a process, but it may not be the primary reason to do so.

3.23

process capability

capability of a process to meet its purpose as managed by an organization's management and process definition structures

Note 1 to entry: This usage differs from human capability, military capability and operational capability.

Note 2 to entry: Process capability levels are described in [ISO/IEC 33002](#).

3.24

process category

set of processes addressing the same general area of activity

[SOURCE: ISO/TS 18152:2010, 4.15]

3.25

process improvement

set of actions taken to improve the quality of the organization's processes aligned with the business needs and the needs of other concerned parties

[SOURCE: ISO/IEC 33001:2015, 3.1.7, modified — The words "set of" have been added to the definition.]

3.26

process outcome

observable result of the successful achievement of the process purpose

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.34]

3.27

process purpose

high level objective of performing the process and the likely outcomes of effective implementation of the process

Note 1 to entry: The implementation of the process is to provide benefits to the stakeholders.

[SOURCE: ISO/IEC/IEEE 12207:2017, 3.1.35]

3.28

project

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

Note 1 to entry: The term “project” is not intended to be exclusive to the development of a system. Projects include long-term activities related to a system, such as training, maintenance and support.

[SOURCE: ISO/IEC/IEEE 15288:2015, 4.1.33, modified — Note 1 to entry has been changed.]

3.29

prototype

<interactive system> representation of all or part of an interactive system, that, although limited in some way, can be used for analysis, design and evaluation

Note 1 to entry: A prototype can be as simple as a sketch or static mock-up or as complicated as a fully functioning interactive system with more or less complete functionality.

[SOURCE: ISO 9241-210:2010, 2.9]

3.30

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

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.3431 meaning 2, modified — The Note and the Example have been deleted.]

3.31

risk

effect of uncertainty on objectives

Note 1 to entry: An effect is a deviation from the expected — positive and/or negative.

Note 2 to entry: Objectives can have different aspects (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product and process).

Note 3 to entry: Risk is often characterized by reference to potential events and consequences, or a combination of these.

Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence.

Note 5 to entry: Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of an event, its consequence, or likelihood.

[SOURCE: ISO Guide 73:2009, 1.1]

3.32 **satisfaction**

extent to which the user's physical, cognitive and emotional responses that result from the use of a system, product or service meet the user's needs and expectations

Note 1 to entry: Satisfaction includes the extent to which the user experience that results from actual use meets the user's needs and expectations.

Note 2 to entry: Anticipated use can influence satisfaction with actual use.

[SOURCE: ISO 9241-11:2018, 3.1.14]

3.33 **service**

means of delivering value for the customer by facilitating outcomes the customer wants to achieve

Note 1 to entry: Services can include both human-system interactions (e.g. accessing a word processor through the web) and human-human interactions (e.g. a citizen interacting with a clerk at the post office counter).

Note 2 to entry: The "customer" is a user, and does not necessarily have a financial relationship.

[SOURCE: ISO/IEC 20000-1:2018, 3.2.15, modified — The Notes to entry have been replaced.]

3.34 **stakeholder**

person or organization that can affect, be affected by, or perceive themselves to be affected by a decision or activity

Note 1 to entry: Stakeholders can include: users, systems owners or managers and people who are indirectly affected by the operation of a system, product or service.

Note 2 to entry: Different stakeholders can have different expectations, needs, or requirements.

[SOURCE: ISO 31000:2018, 3.3, modified — Note 1 to entry has been replaced and Note 2 to entry has been added.]

3.35 **system**

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

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

Note 2 to entry: A complete system includes all of the associated equipment, facilities, material, computer programs, firmware, technical documentation, services and personnel required for operations and support to the degree necessary for self-sufficient use in its intended environment.

Note 3 to entry: A system can be composed of a product, service, built environment or combination thereof, and people.

[SOURCE: ISO/IEC/IEEE 15288:2015, 4.1.46, modified — Note 2 has been replaced and Note 3 added.]

3.36 **task**

set of activities undertaken in order to achieve a specific goal

Note 1 to entry: These activities can be physical, perceptual and/or cognitive.

Note 2 to entry: While goals are independent of the means used to achieve them, tasks describe particular means of achieving goals.

[SOURCE: ISO 9241-11:2018, 3.1.11]

3.37

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

Note 1 to entry: The "specified" users, goals and context of use refer to the particular combination of users, goals and context of use for which usability is being considered.

Note 2 to entry: The term "usability" is often used as a qualifier to refer to the knowledge, competencies, activities and design attributes that contribute to usability, such as usability expertise, usability professional, usability engineering, usability method, usability evaluation, usability heuristic.

[SOURCE: ISO 9241-11:2018]

3.38

user

person who interacts with a system, product or service

Note 1 to entry: Users of a system, product or service include people who operate the system, people who make use of the output of the system and people who support the system (including maintenance and training).

[SOURCE: ISO 26800:2011, 2.10, modified — Note 1 to entry has been replaced and Note 2 has been removed.]

3.39

user-based evaluation

evaluation that involves representative users performing tasks with the system to enable identification of human-centred quality problems and/or measurements of efficiency, effectiveness, user satisfaction or other user experiences

[SOURCE: ISO/IEC 25066:2016, 3.22, modified — "Usability" has been replaced by "human-centred quality."]

3.40

user experience

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

Note 1 to entry: User's perceptions and responses include the user's emotions, beliefs, preferences, perceptions, comfort, 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 a system, product or service. It also results from the user's internal and physical state resulting from prior experiences, attitudes, skills and personality; and from the context of use.

Note 3 to entry: The term "user experience" can also be used to refer to competence or processes such as user experience professional, user experience design, user experience method, user experience evaluation, user experience research, user experience department.

Note 4 to entry: Human-centred design can only manage those aspects of user experience that result from designed aspects of the interactive system.

[SOURCE: ISO 9241-210:2010, 2.15, modified — The definition has been reworded for clarification, Note 3 to entry has been replaced and Note 4 to entry has been added.]

3.41

user group

subset of intended users who are differentiated from other intended users by characteristics of the users, tasks or environments that could influence usability

[SOURCE: ISO 9241-11:2018 3.1.8]

3.42

user interaction

exchange of information between a user and an interactive system via the user interface to complete the intended task

Note 1 to entry: User interaction is specified in a user interaction specification. This work product focuses on user interactions without considering implementation details. (see ref. CIF7 in [A.2.2](#)).

[SOURCE: ISO/IEC TR 25060:2010, 2.22, modified — Note 1 has been deleted.]

3.43

user interface

set of all the 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, modified — The words "set of" have been added to the definition.]

3.44

user interface design guidance

principle, requirement, recommendation or established convention for designing the user interaction and/or the user interface

Note 1 to entry: Specific requirements, recommendations or established conventions are also referred to as "user interface guidelines".

Note 2 to entry: Principles, requirements and recommendations are published in various sources including the ISO 9241 series and apply across user interface platforms.

Note 3 to entry: "Established conventions" include rules published by suppliers of the user interface platforms such as "Windows" or "Mac OS".

3.45

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

EXAMPLE 1 A presenter (user) needs to know how much time is left (prerequisite) in order to complete the presentation in time (intended outcome) during a presentation with a fixed time limit (context of use).

EXAMPLE 2 An account manager (user) needs to know the number of invoices received and their amounts (prerequisite), in order to complete the daily accounting log (intended outcome) as part of monitoring the cash flow (context of use).

Note 1 to entry: A user need is independent of any proposed solution for that need.

Note 2 to entry: User needs are identified based on various approaches including interviews with users, observations, surveys, evaluations, expert analysis, etc.

Note 3 to entry: User needs often represent gaps (or discrepancies) between what should be and what is.

Note 4 to entry: User needs are transformed into user requirements considering the context of use, user priorities, trade-offs with other system requirements and constraints

[SOURCE: ISO/IEC 25064:2013, 4.18]

3.46

user requirements

set of 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 so that the user can use the system with acceptable usability, accessibility, user experience and avoidance of harm from use.

Note 2 to entry: User requirements are not requirements on the users.

Note 3 to entry: In software engineering terms, user requirements include both “functional” and “non-functional” requirements derived from user needs and capabilities.

[SOURCE: ISO/IEC TR 25060:2010, 2.21, modified — The words “set of” have been added to the definition and the Notes to entry have been replaced.]

3.47 validation

confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled

Note 1 to entry: A system is able to accomplish its intended use, goals and objectives (i.e., meet stakeholder requirements) in the intended operational environment. The right system was built.

Note 2 to entry: Human-centred quality objective can be evaluated as part of validation of an interactive system.

[SOURCE: ISO 9000:2015, 3.8.13, modified — Note 2 to entry has been added.]

3.48 verification

confirmation, through the provision of objective evidence, that specified requirements have been fulfilled

Note 1 to entry: Verification is a set of activities that compares a system or system element against the required characteristics. This includes, but is not limited to, specified requirements, design description and the system itself. The system was built right.

[SOURCE: ISO 9000:2015, 3.8.12]

3.49 work product

artefact produced by a process

EXAMPLE Project plan, requirements specification, design documentation, source code, test plan, test meeting minutes, schedules, budgets, and incident reports.

Note 1 to entry: Work products are evidence of the achievement of process outcomes and of the performance of the relevant activities.

[SOURCE: ISO/IEC 20246:2017, 3.20, modified — The Note has been replaced.]

4 Abbreviated terms

The following abbreviations are used in this document.

HCD human-centred design

HCP human-centred process

KPI key performance indicator

5 Conformance

To conform to this document a project or organization shall demonstrate that it has successfully applied a set of the processes in this document. Assessment of the successful performance of the applied processes shall use the process outcomes as evidence. This may be supported by evidence that relevant activities have been performed and relevant work products have been produced.

There are three ways of applying the processes in this document.

- 1) Applying all processes defined in this document. In this case, conformance means meeting all outcomes of all processes.
- 2) Applying a selected set of processes that are relevant to the project or organizational context. In this case, conformance means both justifying the selection of processes and meeting all outcomes of the declared set of processes.
- 3) Adapting processes to apply the process purpose to a different context or domain (e.g. if not applying processes to interactive systems). This is known as “tailoring” (see [Annex B](#)). In this case, conformance means meeting the declared outcomes of a declared set of processes.

A demonstration of conformance shall therefore:

- a) declare the set of processes for which conformance is claimed;
- b) provide a justification of omission for each process that is omitted;
- c) describe any tailoring of processes and work products (following the requirements of [Annex B](#));
- d) provide evidence of meeting the outcomes of the applied processes.

Assessment of process application is usually carried out by a process capability assessment. In this case, the requirements in the relevant parts of the ISO/IEC 33000 family of standards can be applied.

NOTE Other International Standards present human-centred design in different ways and have different means of demonstrating conformance. [Clause C.3](#) describes how conformance to these standards is assessed.

6 Purpose and benefits of this document

6.1 Purpose of human-centred design

Using a human-centred approach to the design and development of interactive systems has substantial economic and social benefits for users, employers and suppliers, as they tend to be more successful both technically and commercially. In some areas, for example consumer products, purchasers will pay a premium for well-designed products and systems.

A human-centred approach to design, as described in this document, improves user engagement with a project and with the result. Defining HCD processes supports better integration of the HCD practitioner with the project team. It provides a competence definition for usability professionals and an improvement framework for organizations wishing to adopt a human-centred approach to development.

Human-centred design can help achieve and sustain an interactive system that meets defined requirements for human-centred quality (usability, accessibility, user experience and avoidance of harm from use) for users and other stakeholders. The examples below illustrate some of these benefits.

Examples of benefits related to usability:

- increasing the performance of users and the operational efficiency of organizations;
- being easier to understand and use, thus reducing training and support costs;
- improving user satisfaction.

Examples of benefits related to accessibility:

- increasing the size of the potential market by designing for greater diversity;
- increasing usability for people with a wider range of capabilities and thus increasing accessibility;

- avoiding high staff costs resulting from inadequate accessibility.

Examples of benefits related to user experience:

- ease of introduction of a change to a major system into an organization;
- enhanced job satisfaction through feeling in control, with a sense of autonomy;
- sense of familiarity across products from the same manufacturer;
- competitive advantage, for example by improving brand image.

Examples of benefits related to avoiding harm from use:

- increased safety and security for employees using corporate systems;
- enhanced wellbeing through reduced discomfort and stress when using the product;
- avoiding unnecessary expenditure resulting from use errors.

6.2 Purpose of HCD process descriptions

This document describes the processes that represent good practice for implementing human-centred design within and across projects, and for assessing an organization's capability to implement and operate HCD processes. The processes can be applied by small- and medium-sized enterprises as well as by large organizations. See [8.1](#) for examples of the use of the process descriptions.

The processes in [Clause 9](#) describe human-centred design within a project, and provide a starting point for human-centred design. HCP.1, HCP.2 and HCP.4 describe the processes that enable human-centred design within organizations and life cycles. HCP.3 describes the execution of human-centred design within a project.

[Annex D](#) explains the uses of this document in more detail. For some of the applications listed in [Annex D](#), only a subset of the processes described in this document may be used.

6.3 Benefits of using HCD process descriptions

HCD process descriptions provide a level of detail that allows human-centred design to be implemented in a wide range of applications (e.g. for different types of system and life cycle). They describe what is achieved by the process (the purpose and outcomes), as well as how they are performed (the activities). This facilitates their integration, and application and management in a project or organizational context, for example by providing a basis for the selection of methods and techniques. [Clause 7](#) explains the model that provides a framework for the process descriptions.

7 HCD processes

7.1 HCD process model

This document describes a process model for human-centred design. The four HCD processes categories shown in [Figure 1](#) are associated with different areas of responsibility, that are necessary in order to address human-centred quality in interactive systems, as described in [Clause 6](#). The first two categories deal with responsibilities for the processes involved in the management of human-centred design. The third and fourth categories deal with responsibility for the processes necessary to deliver human-centred quality in design projects and in the operation of interactive systems. Each process describes the activities and outcomes involved.

Ensure enterprise focus on human - centred quality (HCP 1) Vision and policies are set across the enterprise	Strategy
Enable human - centred design across projects and systems (HCP 2) Defined processes, guidelines, methods, tools and qualified roles are in place across projects	Organizational infrastructure
Execute human - centred design within a project (HCP 3) Process outputs are produced with appropriate quality: • Context of use is identified • User needs are identified • User requirements are specified • User-system interaction is specified • Prototypes are produced • Evaluation results are available	Project
Introduction, operation and end of life of the system (HCP 4) • Transition into operation is managed • Feedback on the operation is obtained • Operation of the system is supported • Changes in context of use are identified • System continues to satisfy user needs throughout its lifecycle	Operation

Figure 1 — HCD processes

[Figure 1](#) summarizes the HCD process categories and illustrates the different levels in an organization and their responsibilities for human-centred quality. It is a responsibility of the top management in an organization to set vision and policies for how human-centred quality can be addressed by human-centred design (HCP.1). Human-centred design across projects and systems is enabled by those responsible for (project) program management and/or the operation of systems (HCP.2). The execution of human-centred design within projects and the introduction, operation and end of life of systems is carried out by people with the necessary competence [see [Table 11](#), Process outcome i)] within each project (HCP.3 and HCP.4). It is possible that each process category is carried out by a different organizational entity or by a combination of entities.

NOTE [Table 1](#) lists the primary audiences for each process category.

7.2 HCD processes

The HCD processes (HCPs) are listed in [Table 1](#). They are grouped into the following process categories:

- HCP.1: Ensure enterprise focus on human-centred quality;
- HCP.2: Enable human-centred design across projects and systems;
- HCP.3: Execute human-centred design within a project;
- HCP.4: Introduction, operation and end of life of a system.

The process categories HCP.1, HCP.2, HCP.3 and HCP.4 are described in [9.2](#), [9.3](#), [9.4](#) and [9.5](#).

[Table 1](#) also lists the primary audiences for each process category (See [Table F.1](#) for the types of organizational threat addressed by each process category).

NOTE The HCD processes and their descriptions can also be used for education and training.

In HCP.1, HCP.2 and HCP.4, each process is identified with a reference number of the form HCP.x.y where “HCP” is an abbreviation for Human-Centred Process. In HCP.3 the processes are decomposed into sub-processes, and each sub-process is identified with a reference number of the form HCP.x.y.z. The term process is used at all sub-levels of decomposition of the process descriptions. However, for any given process category, processes are only fully described at the lowest level of decomposition.

HCP.1 addresses what organizations need to do to support human-centred design. HCP.2 describes the management of human-centred design within the organization, and HCP.3 details the technical aspects of human-centred design during development or change of a system. HCP.4 covers the introduction and operation of a system. Together, the implementation of these four sets of processes can ensure that the systems produced, acquired and operated by an organization meet requirements for human-centred quality. Organizations can implement these processes to the degree of rigour necessary to achieve required human-centred quality. Individual processes can be applied without the necessity to have all processes in place, and the sequence of implementing and applying them depends on the situation in which they are used.

The purpose of each process is to produce the specified outcomes. However, to assist in the correct implementation as well as the assessment of process performance, the description of each process includes a list of the process activities that are typically carried out to achieve the process outcomes. [Annex A](#) describes the work products that are used.

HCP.3, which describes the processes for executing human-centred design within projects, elaborates on the content of [ISO 9241-210](#) and has a similar scope. It describes the planning and management of human-centred design for a project as well as detailed HCD activities.

NOTE The relationship between the names of the processes in [ISO 9241-210](#) and the names of the HCP.3 processes is explained in [Table 7](#).

HCP.3 is decomposed into sub-processes because it covers the core technical processes of human-centred design and the outcomes and activities for implementing human-centred design within a project are better established. The other processes cover issues that are not within the scope of [ISO 9241-210](#). HCP.1 and HCP.2 describe the organizational governance and high-level management activities that require and resource human-centred design. HCP.4 describes the activities that ensure that human-system issues are addressed throughout the life of a system.

Table 1 — HCD processes

Unique Identifier	Process Name	Primary audiences
HCP.1	Ensure enterprise focus on human-centred quality	Executive responsible for human-centred quality. Ensures: Executive management.
HCP.1.1	Incorporate human-centred quality in business strategy	
HCP.1.2	Institutionalize human-centred quality	
HCP.2	Enable human-centred design across projects and systems	Those responsible for (HCD) processes used by the organization. Ensures: Project, product and usability management.
HCP.2.1	Integration of human-centred design	
HCP.2.2	Resources for human-centred design	
HCP.2.3	Authorization and control of human-centred quality	
HCP.3	Execute human-centred design within a project	Technical leadership responsible for human-centred design. Ensures: Project and product management.
HCP.3.1	Plan and manage human-centred design for the project	
HCP.3.1.1	Establish human-centred quality objectives	
HCP.3.1.2	Manage threats and opportunities that can arise from use of the interactive system	
HCP.3.1.3	Define extent of human-centred design in the project	
HCP.3.1.4	Plan each HCD process activity	

Unique Identifier	Process Name	Primary audiences
HCP.3.1.5	Manage HCD process activities within the project	
HCP.3.2	Identify the context of use	
HCP.3.2.1	Identify the intended user population and differentiate groups of users	
HCP.3.2.2	Identify other aspects of the context of use and reported issues	
HCP.3.3	Establish the user requirements	
HCP.3.3.1	Identify the user needs	
HCP.3.3.2	Specify the user requirements	
HCP.3.3.3	Negotiate the user requirements in the context of a project	
HCP.3.4	Design solution that meets user requirements	
HCP.3.4.1	Specify the user-system interaction	
HCP.3.4.2	Produce and refine user interface design solutions	
HCP.3.5	User-centred evaluation	
HCP.3.5.1	Plan for evaluation throughout the project	
HCP.3.5.2	Plan each evaluation (what to evaluate and how)	
HCP.3.5.3	Carry out each evaluation	
HCP.4	Introduction, operation and end of life of a system	Technical leadership responsible for HCD. Ensures: Service and support management.
HCP.4.1	Introducing the system	
HCP.4.2	Human-centred quality in operation	
HCP.4.3	Human-centred quality during upgrades	
HCP.4.4	Human-centred quality at the end of life of a system	

7.3 Relationships between the HCD processes

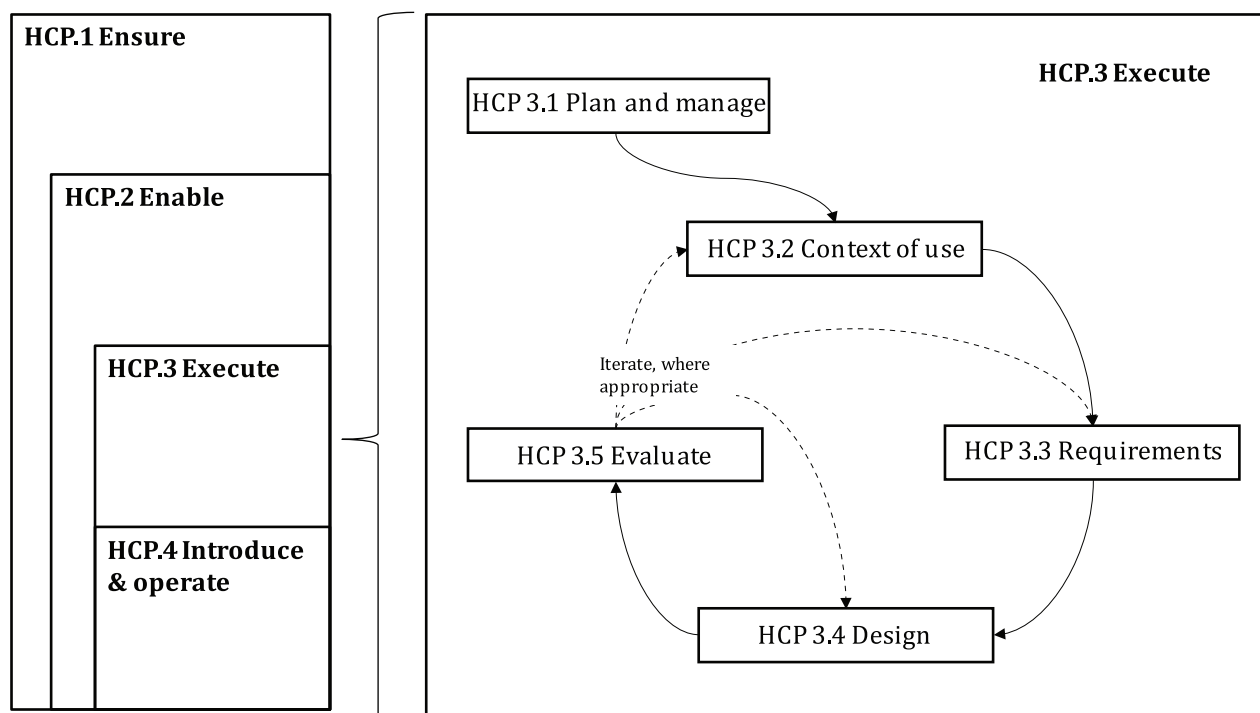


Figure 2 — Relationships between the HCD processes (including the sub-processes in HCP.3)

The nested relationship of HCP.1, 2, 3 and 4 indicates management control and responsibility. HCP.1 is responsible for HCP.2, which is responsible for HCP.3 for each project.

For each project, HCP.3.1 is responsible for the application of the technical processes (HCP.3.2, HCP.3.3, HCP.3.4 and HCP.3.5), as well as the early application of the processes in HCP.4 in order to elicit requirements for the introduction, operation and end of life of a system.

The elaboration of HCP.3 has lines joining the boxes indicating exchange of technical information. An arrowhead on these lines indicates the direction of exchange of a technical work product, such as a set of requirements or an evaluation report. The box for HCP.3.1 is set outside a loop comprised of the other four process boxes and has a line to the loop indicating its control of the technical processes in a project.

The technical processes are typically used iteratively in a project. This is shown by lines and arrows joining the four processes (HCP.3.2 to HCP.3.3 to HCP.3.4 to HCP.3.5) in a loop. Evaluation can result in iteration back to any of HCP.3.2 to 3.4 to extend understanding of the context of use, detailing of the requirements or revision of the design. This is shown by dotted lines back to these boxes.

Evaluation should also take place as part of HCP.4. The results of use of the system provide feedback on whether HCP.1 has been successful as well as identifying any need for re-development of the interactive system, e.g. from a changed context of use.

8 Using the HCD process descriptions

8.1 Uses of the process descriptions

8.1.1 General

This subclause describes how the HCD processes can be used to:

- provide a basis for implementing human-centred design as part of a system development or procurement process and/or support life cycle;
- assess an enterprise's capability to carry out the human-centred processes based on the extent to which the processes have been applied in previous projects;
- improve the application of human-centred design based on identifying gaps between the existing and desired levels of performance of each HCD process;
- provide the basis for the definition of professional competence for HCD professionals.

These applications are summarized below, and described in more detail in [Annex D](#).

8.1.2 Implementing human-centred design as part of a system development or procurement process and/or support life cycle

The HCD processes can be used as a basis for incorporating HCD activities into a system development or procurement process by enterprises (organizations, departments or projects) and/or into a support life cycle that needs to be human-centred.

In this application, the enterprise identifies which HCD processes help to meet its organizational needs, and the capability required to achieve the enterprise's business purposes. The detailed description of process work products in [Annex A](#) and the information management procedure described in [B.3](#) can assist in this definition. This typically takes place as part of improvement (see [8.1.4](#)) after assessment (see [8.1.3](#)).

8.1.3 Assessing an enterprise's existing capability to carry out the human-centred processes

This document can be used in the assessment of an enterprise's capability to carry out the human-centred processes that it describes and, hence, achieve acceptable human-centred quality in the interactive systems that it produces or acquires. [Clause 4](#) provides the requirements for a conformant assessment.

In this application, the first step is the scoping of the model for the assessment. This consists of the selection of relevant processes and the definition of the maximum capability that the organization aspires to. If an organization wants to gain an overview of its capability in relation to human-centred design, it assesses all processes. If an organization wants to assure particular capabilities, then processes with outcomes related to that capability are assessed. The next step is to select typical projects for assessment. Assessments vary in their degree of rigour. For a thorough assessment, a range of projects is selected to be representative of the spread of work, size of project and diligence of the enterprise.

The assessment is typically achieved by interviewing selected staff, to ascertain how well the outcomes of the processes are achieved. The work products listed in [Annex A](#) can be used as evidence of the performance of the activities.

8.1.4 Improving the application of human-centred design as part of an existing system development process

The assessment of an enterprise's capability to carry out the human-centred processes can be extended to identify the gaps between the existing and desired levels of performance of each HCD process. HCD methods and management actions can then be identified to fill the gaps and raise the level of performance in a way that is cost-effective for the particular organization. Repeated assessment can support a continuous improvement program for human-centred quality in the organization (see HCP.1.2 Activity 3).

In this application, the organization reviews the results of its process assessment against the outcomes and benefits achieved by better performance of each process. Where this would improve organizational performance in a cost-effective manner, the activities, outcomes and work products are used as a specification for change to its processes. This change is typically achieved in stages, and progress is measured by further assessments.

8.1.5 Development of competence in human-centred design

The processes can be used as a basis for a definition of professional competence for HCD professionals. An agreed model of the activities that constitute human-centred design can be used by professional bodies, academic institutions, training organizations and certification bodies.

In this application, competence is defined in terms of two dimensions, or axes. One axis is the set of HCD processes. The other axis defines the levels of proficiency in performing these processes. In an educational context, the structure can serve as a framework for skills and knowledge or, more specifically, as a basis for a course syllabus. The outcomes, activities and work products described for each process can be used to identify and link content for education and training courses in human-centred design and usability.

8.2 Applying the process descriptions

8.2.1 General

The approach used to describe processes in this document is based on the ISO/IEC 33000 family of standards and focuses on the outcomes, i.e. what is achieved when the process is carried out, not the detail of methods or the production of documents. This approach allows process descriptions to be applied to many different systems, projects and organizational settings. Process descriptions are brief and concise so that they can be interpreted for a wide range of management and development styles, methods and techniques.

8.2.2 Integration with systems and software engineering

The processes in this document can be integrated within an existing development life cycle to ensure the impact of key development decisions is not missed. They are not intended to present an alternative life cycle and can be harmonized with an existing development process that the organization follows.

The structure used for documenting HCD processes in this document is the same as that used for the International Standards for systems and software engineering processes. This allows HCD processes to be integrated with, and implemented and assessed in the same way as systems and software engineering standards, such as [ISO/IEC/IEEE 15288](#), [ISO/IEC/IEEE 12207](#), the ISO/IEC 33000 family of standards (SPICE) and CMMI. This common approach facilitates the integration of human-centred design with systems and software engineering.

NOTE 1 [ISO/IEC/IEEE 15288:2015](#), 8.4.2.3.c) 2) refers readers to:

- [ISO/TS 18152](#) for information on human-system issues; and
- [ISO/IEC TR 25060:2010](#) for information on usability.

NOTE 2 [ISO/IEC/IEEE 12207:2017](#), 6.4.2.3 notes that: “recommendations for identifying and treating human-system issues can be found in [ISO/TS 18152](#)”.

[ISO/IEC/IEEE 12207:2017](#), 6.4.3.3 notes that “For systems that have usability requirements, recommendations for obtaining a desired level of usability can be found in ISO [...] 9241-220”.

[ISO/IEC/IEEE 12207:2017](#), 6.4.5.3 notes that “[ISO 9241-210](#) provides human centred design/ergonomic design guidelines”.

The activities and outcomes within the processes introduced in this document can be integrated within agile development such as “SCRUM”, “Disciplined Agile Delivery (DAD)” or “Lean UX”. In an agile development environment, the requirements for parts of the interactive system are typically derived and implemented within short timeframes and the implemented parts of the interactive system are evaluated immediately. Within agile development, each cycle can be considered a complete but short self-contained project. The range of activities in HCP.3 can each be relevant, but may be tailored (see [Annex B](#)) to the time frame available. Preliminary work to establish the overall context of use and known user requirements provides essential information for the success of implementing human-centred design in the agile development cycles detailing, refining and extending the preliminary work.

8.2.3 Implementation of the processes

The sets of process descriptions in this document are organized in a logical sequence. HCP.3 and HCP.4 do not constitute a life cycle as the processes can be repeated at different points in any life cycle. Processes are implemented taking account of the levels of usability, accessibility and/or user experience needed to minimize harm and maximize the opportunity for positive benefits (see [Annex F](#) for information about risk management and human-centred design).

Human-centred design can be implemented in a wide range of organizational contexts including those listed below. These are described in more detail in [D.2](#).

- Formality ranging from governance-centred to ad hoc.
- Both manufacturers and acquirers (including both off-the-shelf products and custom developments).
- Organizations ranging in size from small to large.
- Both introduction and improvement of human-centred design.
- Both top down and bottom-up application of human-centred design.
- Both system and service providers.

8.2.4 Iteration of processes

As an interactive system is defined, developed and maintained, processes are likely to be carried out, partly or fully, several times in a life cycle, and in various parts of an organization. HCD processes can be repeated, as the result of iterative development or continuous improvement of the system. Processes

are performed whenever the need for specific outcomes arises. The duration and degree of rigour employed in the performance of a process depends on risk, context and requirements.

EXAMPLE 1 HCP.4 processes are used early in the lifecycle to define requirements related to introduction, operation and disposal.

EXAMPLE 2 Technical processes (HCP.3.2-5) are used recursively in the hierarchical decomposition of complex and large systems, and repeatedly for each agile iteration (e.g. within a sprint).

9 HCD process descriptions

9.1 Format

For each process or sub-process, this document specifies the following process elements:

- process title: a descriptive heading for a process;
- process purpose: describes the goal of performing the process;
- process benefits: describes how the process contributes to human-centred quality and/or human-centred design;
- process outcomes: the observable results obtained from the successful performance of the process. these are the criteria against which a process is assessed;
- process activities: activities that are typically performed to achieve the process outcomes. Each activity is followed by a list of associated outcomes (e.g. [a, b]). Activities provide evidence that processes have been performed;
- work products ([Annex A](#)): information items and other artefacts associated with the performance of a process. Work products provide evidence that processes have been performed. Examples of work products include business strategy, project plan, requirements specification, design documentation, and test plan. In order to simplify the presentation of processes in the main text, the work products associated with each process are described in [Annex A](#), which lists the work products for each process, and [Tables A.1](#) to [A.3](#) which describe the naming conventions used and the work products specific to human-centred design.

NOTE These elements are used by different people with different roles: the purpose and benefits are used strategically at a senior level, the outcomes are used to manage, and the activities are used technically at an implementation level.

The HCD processes in this document follow the format used in the ISO/IEC 33000 family of standards and the process description rules specified in [ISO/IEC TR 24774](#).

9.2 Ensure enterprise focus on human-centred quality (HCP.1)

9.2.1 Purpose and outcomes of HCP.1

The main audience for this set of processes is executives and management who understand that human-centred quality provides opportunities and addresses risks related to organizational/business success, corporate image or society, customer confidence, staff motivation, and human-system issues in governance and services.

NOTE 1 The content of this set of processes is likely to be communicated to executives and management by specialists who are familiar with the content of this document.

The purpose of this set of processes is to establish and maintain awareness and sensitivity to satisfying stakeholder and user needs for human-centred quality across the organization, and make these needs an inherent element in an organization's business strategy.

The outcomes achieved by this set of processes are as follows:

- human-centred quality of interactive systems is treated as corporate asset across the organization;
- policies for achieving required levels of human-centred quality are set (demonstrating senior management support for the improvement of infrastructure related to human-centred quality);
- institutionalization of human-centred design in the organization is managed;
- the organization employs HCD activities to maintain an appropriate level of human-centred quality:
 - across systems, products and services;
 - over time;
 - in the market and workplace;
- human effectiveness, cost and risk analysis results are taken into account in investment decisions.

NOTE 2 This process supports the [ISO 27500](#) principle “Make usability and accessibility strategic business objectives”. [Clause C.1](#) explains how this document can support achieving the benefits of a human-centred organization described in [ISO 27500](#).

These outcomes are achieved by performance of the following processes.

9.2.2 Incorporate human-centred quality in business strategy (HCP.1.1)

[Table 2](#) describes the purpose, benefits, outcomes and process activities to be conducted within HCP.1.1.

Table 2 — Purpose, benefits, outcomes and activities of HCP.1.1

Process purpose	Explicitly take account of the human-centred quality of interactive systems in an organization's business strategy. NOTE This applies to both the human-centred quality of interactive systems acquired for use and those designed and developed by an organization.
Process benefits	The organization and affected stakeholders benefit from improved human-centred quality.
Process outcomes	a) Analysis of opportunities for the organization related to human-centred quality, including the understanding and mitigation of risks. b) A corporate vision of human-centred quality as a corporate asset. c) Strategic objectives for the human-centred quality of the organization's interactive systems in the market/work place are set. d) Objectives for human-centred quality are included in the organization's business operational targets. e) Investment in interactive systems takes account of the contribution of human-centred design to business effectiveness, cost benefits and risk analysis. f) Necessary resources for addressing human-centred quality are available.

Process activities (typical)	1) Determine the extent to which improved human-centred quality of interactive systems presents opportunities for the organization and poor human-centred quality of interactive systems is a threat for the organization. [a, b] 2) Decide how the organization will identify the objectives for the human-centred quality of its interactive systems. [c] 3) Define strategic human-centred quality objectives for interactive systems. [c, d] 4) Assess how human-centred quality is related to business benefits for the organization. [d, e] 5) Explicitly plan for human-centred quality in financial management of programs and infrastructure. [c, d, e, f] 6) Analyse social, educational and technological trends in staff and users. [c, f]
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9.2.3 Institutionalize human-centred quality (HCP.1.2)

[Table 3](#) describes the purpose, benefits, outcomes and process activities to be conducted within HCP.1.2.

Table 3 — Purpose, benefits, outcomes and activities of HCP.1.2

Process purpose	Establish and maintain a human-centred approach as normal practice in the organization.
Process benefits	The organization takes account of human-centred quality.
Process outcomes	a) Top management promotes a human-centred approach to system design, operation and procurement. b) The organization has a strategic vision for the value of taking account of user experience both for its products and systems for staff use. c) The extent to which targets for human-centred quality need to be achieved for different products or market segments is known. d) Human-centred design is applied in the development of interactive systems. e) The enterprise is responsive to changes in how their interactive systems are used.

Process activities (typical)	1) Designate a suitable member of the executive board to be responsible for championing a human-centred approach and getting top management endorsement. [a] 2) Establish and communicate a policy for achieving required levels of human-centred quality in the organization. [a] 3) Establish a continuous improvement program for human-centred quality in the organization. [a] 4) Establish and maintain awareness of the importance of human-centred quality. [b] 5) Assess and define the importance of human-centred quality in different market segments, taking account of the expectations for human-centred quality of the products in those market segments. [c] 6) Ensure acceptance of human-centred activities in the organization. [d] 7) Develop the systems strategy to take account of user, other stakeholder and organizational requirements. [e]
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9.3 Enable human-centred design across projects and systems (HCP.2)

9.3.1 Purpose and outcomes of HCP.2

The main audience for this set of processes is business unit/department, portfolio, program, product and HCD managers, process owners and technical specialists with cross-project or organizational responsibilities. The types of risks addressed include threats to the corporate image or society, business survival, and human-system issues in governance and services.

The purpose of these processes is to provide the organization with an appropriate HCD capability, ensuring that human-centred design is resourced, conducted and consistent within the whole system life cycle process within and across systems over time, and that enterprise policies for human-centred design are implemented in every project as appropriate.

The outcomes achieved by this set of processes are as follows:

- the overall system development project plan (for each interactive system and across interactive systems) incorporates human-centred quality;
- business planning for each project implements the vision for human-centred quality in terms of:
 - usability;
 - accessibility;
 - user experience; and
 - avoidance of harm from use;
- appropriate procedures for achieving required levels of human-centred quality by HCD activities exist:
 - for systems, products, services;
 - to support interoperability, integration, consistency of use across systems, products, services;
 - across user groups;

- over time;
- an organizational infrastructure and staff for HCD processes is established, promoted and maintained;
- human-centred quality is an inherent element in the process of acquisition, supply and operation of each interactive system and across interactive systems, facilitating co-existence and interoperability of interactive systems;
- trade-off and risk management explicitly include human-centred quality in mitigating risks;
- human factors data necessary for the organization to carry out human-centred design and maintain acceptable levels of human-centred quality are available.

These outcomes are achieved by performance of the following processes.

9.3.2 Integration of human-centred design (HCP.2.1)

[Table 4](#) describes the purpose, benefits, outcomes and process activities to be conducted within HCP.2.1.

Table 4 — Purpose, benefits, outcomes and activities of HCP.2.1

Process purpose	To ensure that the organization has procedures that enable human-centred design to be appropriately integrated into all phases of the life cycle for interactive systems.
Process benefits	Human-centred design is used appropriately.
Process outcomes	a) The organization has a shared understanding of human-centred design and how it is achieved. b) Human-centred design is a documented part of the systems development process and the overall system development project plan (for each interactive system and across interactive systems). c) Procedures are defined for integrating HCD activities with other system development activities. d) An effective mechanism is established for personal and technical communication related to human system issues. e) Strategic human-system issues and associated risks of harm related to systems and their use are identified and managed. f) The costs and benefits of particular HCD activities and the risks mitigated are known. g) Stakeholders relevant to the human-centred approach are involved. h) Human-centred quality objectives are included in the procurement process. i) Marketing and other relationships with external entities explicitly take account of human-centred quality as appropriate.

Process activities (typical)	1) Establish a common terminology for human-system issues within the organization. [a] 2) Integrate human-centred design into the overall system development project plan. [b, c] 3) Collect feedback on the management of human-system issues across the organization. [d] 4) Develop effective procedures for communication between those responsible for human-centred design and other members of project teams. [c, d] 5) Identify emerging human-system issues for the organization. [e, f] 6) Identify and integrate stakeholders relevant to the human-centred approach. [g] 7) Explicitly take account of human-centred quality in procurement. [h] 8) Analyse image, client-relationships and competitive situation in the market place with respect to a human-centred approach. [i] NOTE The marketing function in an organization typically provides: — Information on target user groups; — insights in key drivers of user satisfaction; — prioritization guidance based on the market situation; — objective sales data that can be correlated with usability data – for validation and ROI assessment.
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9.3.3 Resources for human-centred design (HCP.2.2)

[Table 5](#) describes the purpose, benefits, outcomes and process activities to be conducted within HCP.2.2.

Table 5 — Purpose, benefits, outcomes and activities of HCP.2.2

Process purpose	To establish and maintain an effective infrastructure for human-centred design within the organization.
Process benefits	Human-centred design can be carried out as appropriate by each project.