INTERNATIONAL STANDARD

ISO 27501

First edition 2019-02

The human-centred organization — Guidance for managers

 ${\it Organisme centr\'e sur l'humain-Lignes directrices pour les dirigeants}$





COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

Co	ntent	SS S	Page
Fore	eword		iv
Intr	oductio	n	v
1	Scon	e	1
2	•	native references	
3		ns and definitions	
4	4.1 4.2	human-centred organization and ergonomics The seven principles of a human-centred organization Ergonomics/human factors	4
5	Stak	eholders and management levels	6
	5.1	Stakeholders and value co-creation	6
	5.2	Change of perspective: Internal customers and external employees	
	5.3	Management responsibilities	
6	Strat	tegic planning and human-centred activities	8
7	Man	agement responsibilities in a human-centred organization	
	7.1	General	
	7.2	Organizational policies	
	7.3	Organizational activities	
		7.3.1 General 7.3.2 Integration 7.3.2	
		7.3.3 Planning	
		7.3.4 Operations management	
	7.4	Consideration of Individual differences, usability, and accessibility	
		7.4.1 General	
	7.5	Communication	13
		7.5.1 General	
		7.5.2 Open and transparent communications	
		7.5.3 Effective communications	14
8	Conf	ormance	14
Ann	ex A (in	formative)	15
Ann	ex B (in	formative)	19
Rihl	iogrank	nv.	27

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 1, *General ergonomics principles*.

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 is based on ISO 27500, which explains to executive board members the principles that enshrine the values and beliefs that make an organization human-centred. The term *human-centred* is used to reflect that organizations not only have an impact on their customers (the users of their products and services), but also on other stakeholders, including their employees, their families, and the wider community. ISO 27500 explains seven principles of *human centredness*, which are:

- capitalize on individual differences as an organizational strength;
- make usability and accessibility strategic business objectives;
- adopt a total system approach;
- ensure health, safety and wellbeing are business priorities;
- value personnel and create meaningful work;
- be open and trustworthy; and
- act in socially responsible ways.

Although it is recognized that organizations establish their governance systems based on a set of principles which they develop (as described in ISO 30408), the principles described here are considered to be essential to be included by organizations that wish to make the claim of being human-centred.

Human factors and ergonomics provide an effective and valuable approach for managers to utilize in their day-to-day work to support the achievement of a human-centred organization.

The requirements and recommendations of this document are intended to be applicable to various types of organizations in the private, public and non-profit sectors, whether large or small. Organizations vary in their assignment of management responsibilities. Some larger organizations can assign the responsibilities set out in this document to multiple managers, while some smaller organizations can have these assigned to a few managers or even one manager. While not all clauses of this document are of equal use to all types of organizations, all the core subjects are relevant to every organization. It is the individual organization's responsibility to identify which clauses are relevant and significant for the organization to address, through its own considerations and through dialogue with stakeholders.

The human-centred organization — Guidance for managers

1 Scope

This document is intended to be used within organizations that embrace and intend to implement the principles of human centredness outlined in ISO 27500.

This document is intended to provide requirements and recommendations on the human factors and ergonomics approach to achieving a successful and sustainable human-centred organization. It outlines managers' responsibilities ranging from organizational strategy to development of procedures and processes enabling human centredness, and the implementation of those procedures and processes.

This document provides requirements and recommendations for managers and the actions to be taken in order for an organization to achieve human centredness.

This document can be used:

- a) by managers to understand and improve human-centred aspects of their activities;
- b) by managers to identify how their staff can improve human-centred aspects of their activities;
- c) to provide a basis for training managers how to be human-centred;
- d) to provide a basis for organizations to evaluate the performance of managers.

It is not a management systems standard. Nor is it intended to prevent the development of standards that are more specific or more demanding.

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

ergonomics

human factors

scientific discipline concerned with the understanding of interactions among human and other elements of a *system* (3.5), and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance

Note 1 to entry: This definition is consistent with that given by the International Ergonomics Association.

[SOURCE: ISO 26800:2011, 2.2]

3.2

organization

person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

Note 1 to entry: The concept of organization includes, but is not limited to, sole-trader, company, corporation, firm, enterprise, authority, partnership, association, charity or institution or part or combination thereof, whether incorporated or not, public or private.

[SOURCE: ISO 9000:2015, 3.2.1, modified — Note 2 to entry has been deleted.]

3.3

usability

extent to which a *system* (3.5), product or *service* (3.6), can be used by specified *users* (3.13) to achieve specified goals with *effectiveness* (3.7), *efficiency* (3.8) and satisfaction in a specified context of use

[SOURCE: ISO 9241-210:2010, 2.13, modified —Note 1 to entry has been removed.]

3.4

accessibility

extent to which products, systems (3.5), services (3.6), environments and facilities can be used by people from a population with the widest range of user (3.13) 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 9241-125:2017]

3.5

system

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

[SOURCE: ISO 26800:2011, 2.7, modified — The Notes to entry have been removed.]

3.6

service

means of delivering value for the *stakeholder* (3.9) by facilitating results which the stakeholder 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 results of the service can be intangible and tangible in nature.

Note 3 to entry: Delivered value consists of fundamental value, knowledge value and emotional value.

[SOURCE: ISO/IEC 20000-1:2018, 3.2.15, modified — In the definition, the terms "stakeholder" and "results" have been substituted for "customer" and "outcomes". Notes 1 to 2 to entry have been changed and Note 3 to entry has been added.]

3.7

effectiveness

accuracy and completeness with which users (3.13) achieve specified goals

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

3.8

efficiency

resources used in relation to the results achieved

[SOURCE: ISO 9241-11:2018, 3.1.13, modified —Note 1 to entry has been removed.]

3.9

stakeholder

person or *organization* (3.2) that can affect, be affected by, or perceive themselves to be affected by a decision or activity

Note 1 to entry: Includes, but not limited to environmental organizations, investors, communities, regulators, employees, specific employee groups and customers.

[SOURCE: ISO 31000:2018, 3.3, modified —Note 1 to entry has been changed.]

3.10

workspace

volume allocated to one or more persons in the work system (3.5) to complete the work tasks (3.12)

[SOURCE: ISO 6385:2016, 2.9]

3.11

environment

physical, chemical, biological, organizational, social and cultural factors surrounding one or more persons

[SOURCE: ISO 26800:2011, 2.3]

3.12

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]

3.13

user

person who interacts with a system (3.5), product or service (3.6)

[SOURCE: ISO 26800:2011, 2.10, modified — Notes 1 to 3 to entry have been removed.]

3.14

customer

organization (3.2) or individual purchasing property, products, or services (3.6), for commercial, private, or personal use

Note 1 to entry: A customer does not necessarily have a financial relationship with the organization.

[SOURCE: ISO 27500:2016, 2.2, modified — In the definition, the phrase "public purposes" has been changed to "personal use" and Note 1 to entry has been added.]

3.15

fundamental value

value expected by stakeholders (3.9)

3.16

knowledge value

value stemming from knowledge of *stakeholders* (3.9), through their interactions

3.17

emotional value

value stemming from emotion of *stakeholders* (3.9) through their interactions

Note 1 to entry: Emotional value can be short term from a single or short, successful interaction, or it can be long term (trust and comfort).

3.18

workstation

combination and spatial arrangement of work equipment, surrounded by the work *environment* (3.11) under the conditions imposed by the work *tasks* (3.12)

[SOURCE: ISO 6385:2016, 2.18]

3.19

iob

organization and sequence in time and space of an individual's work *tasks* (3.12) or the combination of all human performance by one worker within a work *system* (3.5)

[SOURCE: ISO 6385:2016, 2.16]

3.20

human-centred design

approach to *systems* (3.5) design and development that aims to make systems more usable by focusing on the use of the system and applying *ergonomics* (3.1), *human factors* (3.1) and *usability* (3.3) knowledge and techniques

[SOURCE: ISO 9241-210:2010, 2.7, modified — In the definition, the phrases "interactive system" and "human factors/ergonomics" have been replaced by "system" and "ergonomics, human factors". Notes 1 and 2 to entry have been removed.]

4 The human-centred organization and ergonomics

4.1 The seven principles of a human-centred organization

The seven principles that characterize a human-centred organization, are outlined in ISO 27500 as follows.

1) Capitalize on individual differences as an organizational strength

The organization recognises individual differences as a strength and takes this into account in all areas of its business. The organization accommodates the nature and extent of individual differences, and creates teams of individuals who have complimentary skills.

2) Make usability and accessibility strategic business objectives

The human-centred organization uses International Standards and best practices to ensure that products, systems and services are accessible and usable (effective, efficient and satisfying to use) both by personnel and by other stakeholders.

3) Adopt a total system approach

The organization recognizes that people are part of a comprehensive system, which can include many elements such as equipment, workspace, and the physical, social and organizational environment in which people work and live. These elements interact and are interdependent, and the organization understands this and acts accordingly.

4) Ensure that health, safety and wellbeing are business priorities

The organization takes the necessary steps to protect individuals (both inside and outside the organization) from hazards to their health, safety and wellbeing, and aims to exceed the minimum requirements required by legislation.

5) Value personnel and create meaningful work

The organization values and acknowledges the contribution that personnel make. It strives to create meaningful tasks for all potential users of the system. The intent for this principle is not to develop

a workplace within which a worker simply "survives" (passive vision), but to create an environment within which to live and thrive as a meaningful part of the organization's objectives and work.

6) **Be open and trustworthy**

The organization benefits from being open and trustworthy through enhanced customer relations (internal and external), user confidence, and increased loyalty, as well as an enhanced reputation.

7) Act in socially responsible ways

The organization is socially responsible. It behaves ethically and instils pride and confidence in its personnel, customers, and the local community. It does this by following the recommendations in ISO 26000.

4.2 Ergonomics/human factors

Ergonomics (or human factors), by definition, is human-centred. As detailed in ISO 26800, ergonomics addresses the interactions between humans and the other components of a system, such as, machines, products, services, environments and tools. All of these are integrally important in order to achieve a human-centred organization. Although the terms human factors and ergonomics are synonymous, the remainder of this document uses "ergonomics" for expediency.

The ergonomics approach helps to support and maintain a human-centred organization in its regular maintenance and operation of systems and whenever systems are being designed, redesigned and improved.

The ergonomics approach and its associated methodologies can be applied to any system, whether that system is one that is internal to the organization (such as the organization's intranet), or one that includes external stakeholders (such as the design of a product which the organization intends to sell). An ergonomics approach can also be applied to the organization as a whole (i.e. the organization itself can be considered as a "system.") In addition to ergonomics, there are also other types of considerations which organizations address as a part of being human-centred (see other standards listed in Annex B for examples).

Figure 1 represents the relationship between this document and ISO 27500. It shows how the responsibilities in question in each of the two International Standards differ, based on the target audience for each standard (i.e. either executive board members and policy makers or other levels of management). It also includes some key references on which this document is based. ISO 27500 contributes to the organization's strategic planning for ergonomics (shown on the left-hand side of the figure) and other activities of the organization (shown on the right).

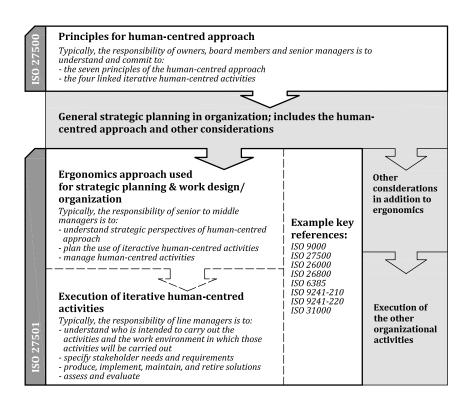


Figure 1 — Relationship between ISO 27500 and ISO 27501

5 Stakeholders and management levels

5.1 Stakeholders and value co-creation

Stakeholders can affect the organization, and the organization can affect stakeholders. Human-centred organizations and their stakeholders co-create values through their relationships and interactions. Stakeholder groups in the framework include management, employees and/or their representatives, customers and society. Managers and employees and/or their representatives are examples of internal stakeholders to the organization and customers are examples of external stakeholders. There are societal stakeholders in terms of cultural norms and expectations (e.g., regulatory bodies, communities of operation, environmental organizations, investors).

Value is "co-created" among stakeholders, and the benefits are realized by all parties[25][27][29][30]. Co-creation values are categorized into:

- fundamental value;
- knowledge value; and
- emotional value^[28].

Fundamental value refers to the value that is expected by stakeholders. Knowledge value comes from knowledge of stakeholders such as business relations, their preferences and visions, and knowledge of products and services such as their contents and usages. Such knowledge becomes a cumulative resource to promote co-creation. Emotional value comes from short-term emotion such as pleasure and joy through interactions, and long-term emotions such as trust and comfort. It is also a resource to promote co-creation. Co-creation values are considered and nurtured by management when decisions around work and organization are made, so that successful stakeholder relationships can be supported, thereby supporting the human-centred organization.

Management directives should reflect a balanced attention to stakeholder groups in order to promote the sustainable growth of the organization. Executive board members and policy makers are tasked

with the responsibility of leading the organization and committing to provide the resources needed to achieve their goals. Regarding the human-centred organization, this responsibility is outlined in more detail in ISO 27500.

5.2 Change of perspective: Internal customers and external employees

A useful concept for human-centred organizations is that employees be considered as internal customers, and that customers be considered as external employees [#21–24]. In the human-centred organization, all employees and managers should treat each other as if they were prized customers, because excellent internal customer service helps organizations yield a positive interaction, improve interdepartmental communication and cooperation, harmonize processes and procedures and boost employee morale and satisfaction. Hence, it promotes safety and health in the organization, and contributes to long-term wellbeing. This also reduces costs, increases productivity and produces better output.

Similarly, customers are not just purchasers or users of products and services rather they provide resources to the organization. These customers can be regarded as external employees who participate in the development and delivery of products and services. In doing so, they add resources to the value creation process as external employees and increase the value of the organization. Figure 2 shows the framework of stakeholders.

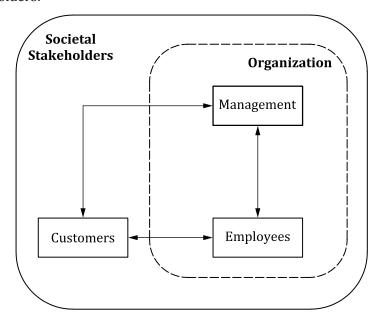


Figure 2 — Framework of stakeholders

5.3 Management responsibilities

Where the achievement of a human-centred organization is concerned, the following distinctions can be made between the typically assigned responsibilities for senior, middle and line managers:

- a) The responsibility of senior to middle managers is to co-create value by:
 - understanding strategic perspectives of the human-centred approach;
 - planning use of iterative human-centred activities;
 - managing human-centred activities.
- b) The responsibility of line managers is to co-create value by:
 - understanding who is intended to carry out the activities and the context in which those activities will be carried out;

- specifying stakeholder needs and requirements;
- producing, implementing, maintaining, and retiring solutions;
- assessing and evaluating.

Depending on their sizes, organizations vary in the number of people employed at different levels of management. As a result, there can be one manager only, a small number of managers, or a large number of people at various levels of management positions (e.g., senior, middle, or line managers). Therefore, the requirements in this document do not distinguish between management levels and they can fit the many varieties of organizational structures.

6 Strategic planning and human-centred activities

In an organization, the sphere of responsibility across which the seven human-centred principles are to be applied increases with the level of the manager. Therefore, it is very important that middle and, especially senior level managers, acting on behalf of the organization, have a deep strategic understanding of the human-centred approach that allows them to effectively plan the human-centred initiatives over which they have high-level management and oversight responsibility. This understanding allows these managers to make wise planning decisions about such things as the prioritization, scheduling, and coordination of the initiatives, as well as the acquisition and/or allocation of resources to them.

The results of strategic planning are communicated to line managers and set the context for the four human-centred ergonomics-related activities that will be iteratively conducted by these line managers whose responsibility it is to execute the initiatives.

Organizations shall ensure that managers can practice each of the four iterative human-centred, ergonomics-related activities described below by providing the necessary resources (e.g. time, money, expertise, customers, consultants).

The four activities are:

a) Understand the context

- Understand the context in which each stakeholder group interacts with the organization, and therefore how a new or changed system will affect that stakeholder group's interests. This will lead to more effective change and maintenance of strong relationships with stakeholders.
- Include the characteristics of the activities, as well as the directly affected stakeholders, specific systems, and the organizational, technical, and physical environment, in the contextual information being considered.

b) Analyse stakeholder needs and specify requirements

Having understood the context, identify and analyse the relevant needs of all stakeholder groups, so that requirements can be developed for solutions or changes.

c) Create, implement, maintain and retire solutions

- Produce and implement solutions based on these requirements.
- Maintain solutions until they are retired as circumstances, needs, contexts and stakeholder characteristics evolve and change.

d) Assess and evaluate

 Assess and evaluate situations or circumstances often and iteratively (i.e. not only at the beginning of a process, but throughout and at the end of system cycles.) This enables the organization to stay on target with intended goals, and to maintain quality. This is the central human-centred activity.

- Identify the perspective(s) from which the assessment is to be conducted. The perspective may include all or some of the following:
 - organization-wide (cross-system, e.g. from customer service to sales flow);
 - internal to one specific system (e.g. staff training functions);
 - between organizations (e.g. sister operations, regulatory bodies, community organizations);
 - across management systems within the organization (e.g. how a line manager will experience a change which a middle manager is implementing).
- implement processes for evaluation of the information gathered from an assessment (formally or informally) in order to make reasonable decisions.

These human-centred activities can be applied in relation to, for example:

- products,
- services,
- workplaces,
- workstations,
- inter-organizational communications,
- community relations,
- environmental commitments,
- legal compliance.

Strategic planning and the four human-centred activities that are used to co-create value are linked, as shown in Figure 3. The activities can be repeated in cyclical fashion as needed, until the desired outcomes are achieved. There is no required order in which to perform these activities; rather, the order or the starting point, where applicable, is dictated by the circumstances which initiate the activities.

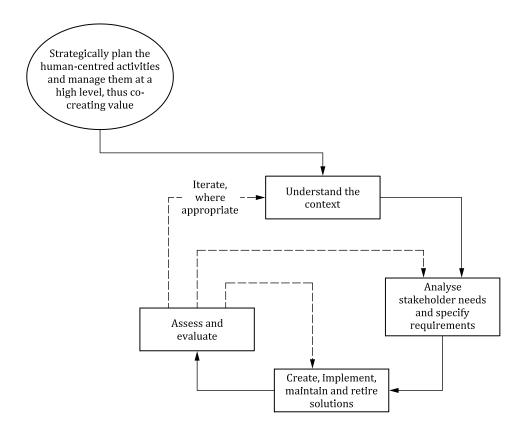


Figure 3 — Relationships among the four human-centred activities in co-creating value¹⁾

7 Management responsibilities in a human-centred organization

7.1 General

The remainder of this document focuses on providing requirements for managers, according to four organizational practices:

- 1) organizational policies;
- 2) organizational activities;
- 3) individual considerations, usability and accessibility; and
- 4) communication.

It is implied and understood that the managers can only be held accountable for the requirements in this clause if they fall within the managers' scope of responsibility and if the organization has provided the managers with the resources and mandates needed to meet the requirements. These requirements have been designed to provide high-level direction towards achieving the seven human-centred principles in the organization, in order to allow the flexibility in an organization to meet cultural, organizational structure and local regulatory demands. These demands will affect how some of the listed responsibilities can be carried out. In addition, it is acknowledged that all of these responsibilities can be met in a variety of ways depending on cultural and other environmental characteristics.

The management requirements in this clause have been listed in <u>Annex A</u> again, according to the human-centred organizational principle(s) to which they are primarily linked, as well as to the stakeholder types affected and other related standards for further reference.

¹⁾ Diagram modified from ISO 9241-210:2010, Figure 1.

Managers should consider performing an organizational review of the responsibilities set out in this clause to identify which responsibilities are already being addressed in their own organization. This will help to identify the gaps, or areas that require strengthening, and to organize plans for how to implement the relevant changes. (Annex B provides a checklist to assist with this gap analysis.)

7.2 Organizational policies

- **7.2.1** Organizations establish formal policies and procedures in order to ensure compliance with laws and regulations and establish consistency of performance throughout the organization. The following subclauses outline requirements for the actions needed within an organization in order to support human centredness.
- **7.2.2** Managers should be open and transparent about decisions, within the constraints of laws, regulations, and intellectual property and privacy considerations. Managers should document and communicate clearly to internal and external stakeholders the processes followed during decision–making.
- **7.2.3** Managers shall identify and understand their responsibilities for the protection of the health, safety and wellbeing of the people impacted by their activities.
- **7.2.4** Managers shall openly communicate with stakeholders about their requirements and the organization's responses to them, within the constraints of laws, regulations, and intellectual property and privacy considerations.

7.3 Organizational activities

7.3.1 General

Organizations exist with the goals of developing and implementing or delivering products, services, and systems. Some of these goals are internally focused, while others are externally focused and some can be focused both internally and externally. The following subclauses describe the human-centred requirements related to achieving these organizational goals as relevant to organizational integration of a human-centred approach, planning and operations management.

7.3.2 Integration

- **7.3.2.1** Managers shall take account of individual differences and foster an organizational culture that is based on respect for and consideration of individual differences.
- **7.3.2.2** Managers responsible for business, technical, and operational activities shall use a formal resolution process to resolve potential or actual mismatches between these activities and human characteristics and capabilities.
- **7.3.2.3** Managers responsible for human-centred initiatives shall document the initiatives and their effects within the organization to provide a basis for future use.
- **7.3.2.4** When making decisions, managers shall take account of the needs and requirements of external stakeholders together with other necessary criteria.
- **7.3.2.5** Managers establishing the technical specifications for the design or purchase of supplies, equipment and facilities for internal use shall consider user characteristics and capabilities.

- **7.3.2.6** Managers responsible for risk assessments shall take into account risks of physical or economic harm to individuals or organizations, including risks related to:
- a) the physical work;
- b) the cognitive demands;
- c) the physical environment;
- d) chemical and biological hazards;
- e) economic consequences; and
- f) wider environmental consequences (e.g., legal, economic, cultural, community).

NOTE A risk assessment can also identify opportunities for improvements in working conditions, jobs, and outcomes related to any of the seven principles.

7.3.3 Planning

- **7.3.3.1** Managers planning an activity related to a product, service or system or undertaking a major development effort shall ensure that all relevant groups of stakeholders both internally and externally have been identified.
- **7.3.3.2** Managers responsible for developing systems shall ensure identification and consideration of the interrelationships between each stakeholder group and other elements of the system (such as equipment, workspace, and the physical, social, and organizational environment) in order to effectively apply a total system approach.
- **7.3.3.3** Managers responsible for activities related to creation or implementation of new systems or modification of existing systems shall establish protocols to identify requirements of all stakeholders.
- **7.3.3.4** Managers responsible for activities related to changes to systems, products, or services shall identify stakeholders to ensure that such changes are evaluated and assessed from their point of view and determine how they may be impacted by the change. Follow-up activities pursuant to an evaluation or assessment shall also be evaluated and assessed.
- **7.3.3.5** Managers responsible for system changes shall assess the potential impact of these changes on stakeholders and monitor the effects of the changes during continuous process improvement and change management activities.
- **7.3.3.6** Managers responsible for the development and maintenance of systems shall ensure that appropriate human-centred design methods are selected to address usability and accessibility.

NOTE There are many methods that can be used, including prototypes, mock-ups, and user feedback and testing during development and whenever changes are made.

7.3.4 Operations management

- **7.3.4.1** Managers responsible for operations shall adapt procedures, tools and performance expectations according to the characteristics and capabilities of those performing the tasks involved.
- **7.3.4.2** Managers responsible for operations shall provide professional development opportunities for personnel through job enrichment and individual opportunities to increase knowledge and develop expertise and skills.

- **7.3.4.3** Managers responsible for operations shall identify and take account of possible and expected mismatches among business, technical, and operational activities, and human characteristics and capabilities.
- **7.3.4.4** Managers responsible for human-centred system, product, and service related activities shall ensure that they are documented and that the documents are made available for development and continuous improvement efforts.

7.4 Consideration of Individual differences, usability, and accessibility

7.4.1 General

- **7.4.1.1** This subclause focuses on the need to consider individual differences within groups of stakeholders in order to ensure that the needs and motivations of individual stakeholders are considered with respect to the organization's human-centred activities. Requirements in this subclause highlight the need for flexibility, and the importance of considering usability and accessibility in light of the different characteristics and capabilities.
- **7.4.1.2** Managers shall establish work schedules, procedures, and rules to allow and motivate personnel to use flexible work approaches that consider individual, customer and co-worker needs within the context of organizational objectives.
- **7.4.1.3** When assigning jobs and tasks, and setting work expectations, managers shall be flexible, taking into account human resources and the range of human characteristics and capabilities of those to whom jobs and tasks will be assigned.
- **7.4.1.4** When establishing tasks, jobs, processes, and performance objectives, managers shall identify and address possible and expected mismatches between task requirements and human characteristics and capabilities.
- **7.4.1.5** Managers shall ensure that organizational, team and individual goals can be achieved in a safe and environmentally responsible manner.

7.5 Communication

7.5.1 General

Communication is a critical success factor for every organization. In order to achieve a human-centred organization, it is important to include key communication aspects as a part of the organization's policy. To achieve human-centred communications, the communications need to be open, transparent and effective.

7.5.2 Open and transparent communications

- **7.5.2.1** Managers shall foster open and respectful communication to achieve and maintain trust throughout the organization.
- **7.5.2.2** To approach and resolve difficult issues, managers shall develop and maintain effective mechanisms for engaging with personnel and their representatives as well as with external stakeholders.
- **7.5.2.3** Managers shall ensure that external stakeholders are informed of the mechanisms by which they can communicate with the organization.

7.5.2.4 When resolving external and societal conflict, managers shall follow open and trustworthy communication practices.

7.5.3 Effective communications

- **7.5.3.1** Managers shall ensure that all personnel are aware of, and have access to, all relevant policies, procedures and work practices, at least when they need them.
- **7.5.3.2** Managers shall ensure that communications are respectful and that communication mechanisms are both usable and accessible to all stakeholders for whom they are intended.
- **7.5.3.3** Managers responsible for the organization's formal communication, both internal and external, shall establish mechanisms for stakeholder feedback.
- **7.5.3.4** Managers shall provide opportunities for personnel to express their opinions and to share their expertise.

8 Conformance

Conformance with this document is achieved by satisfying the requirements in <u>Clauses 6</u> and <u>7</u>. If an organization claims to have met the requirements of this document, the means used to determine how they have been implemented and met shall be specified to an assessor's satisfaction.

Annex A (informative)

A.1 Examples

There are a great many different types of human-centred activities that can demonstrate compliance with each of the requirements in this document (<u>Clause 7</u>), depending on which human-centred principle (ISO 27500) is being considered and which stakeholders are the target of the human-centred activity. Below are six example activities related to 7.3.1.1.6. These examples show how six diverse organizations might demonstrate compliance with this statement, with respect to the two principles that primarily apply from ISO 27500, and the three types of stakeholders.

Based on the principle: "ensure health, safety and wellbeing are business priorities":

EXAMPLE 1 (with reference to an internal stakeholder.)

An office manager ensures that employee workstations are evaluated to achieve configurations which will promote employee comfort and minimize risk of musculoskeletal disorders.

EXAMPLE 2 (with reference to an external stakeholder.)

A pharmaceutical product development manager assesses the range of temperatures under which users can store the company's insulin product, so that it remains safe and effective until used.

EXAMPLE 3 (with reference to societal stakeholders.)

A pesticide manufacturing company manager monitors the manufacturing process to ensure that it does not result in the release of harmful pollutants into the environment.

Based on the principle: "act in socially responsible ways":

EXAMPLE 4 (with reference to an internal stakeholder.)

The manager of a law firm determines the percentage of pro bono cases each attorney can accept each year in order to provide legal representation to financially disadvantaged clients.

EXAMPLE 5 (with reference to an external stakeholder.)

A business manager of a health care organization assesses the impact of potentially closing its satellite clinic, on access to care of its current patients.

EXAMPLE 6 (with reference to societal stakeholders.)

An urban planning organization arranges a town hall meeting to assess the advantages/disadvantages of three candidate sites for a new city park.

A.2 How management requirements relate to human-centred principles and stakeholders

Table A.1 maps each of the management requirements (Clause 7) to the most relevant of the seven human-centred guiding principles (4.2 and ISO 27500). Although most of these requirements can be linked to more than one of the guiding principles, Table A.1 identifies the most significant principle relationships in the third column. The numbers represent each guiding principle according to the following:

1) capitalize on individual differences as an organizational strength;

- 2) make usability and accessibility strategic business objectives;
- 3) adopt a total system approach;
- 4) ensure health, safety and wellbeing are business priorities;
- 5) value personnel and create meaningful work;
- 6) be open and trustworthy;
- 7) act in socially responsible ways.

The final column links each requirement to the stakeholder group or groups, which are most likely to be affected. Stakeholders are identified as internal, external, and societal (5.1).

Table A.1 — Mapping management requirements (Clause 7) with ISO 27500 principles (4.2) and stakeholder groups (5.1)

	Requirement	ISO 27500 primary prin- ciple (see 4.1)	Stakeholder focus
ORGANI	ZATIONAL POLICIES		
7.2.2	Managers should be open and transparent about decisions, within the constraints of laws, regulations, and intellectual property and privacy considerations. Managers should document and communicate clearly to internal and external stakeholders the processes followed during decision-making.	6	Internal External Societal
7.2.3	Managers shall identify and understand their responsibilities for the protection of the health, safety and wellbeing of the people im- pacted by their activities.	4	Internal External
7.2.4	Managers shall openly communicate with stakeholders about their requirements and the organization's responses to them, within the constraints of laws, regulations, and intellectual property and privacy considerations.	6, 7	Internal External Societal
ORGANI	ZATIONAL ACTIVITIES		
Integrat	ion		
7.3.2.1	Managers shall take account of individual differences and foster an organizational culture that is based on respect for and consideration of individual differences.	1, 5	Internal
7.3.2.2	Managers responsible for business, technical, and operational activities shall use a formal resolution process to resolve potential or actual mismatches between, these activities and human characteristics and capabilities.	1, 4	Internal
7.3.2.3	Managers responsible for human-centred initiatives shall document the initiatives and their effects within the organization to provide a basis for future use.	6, 7	Internal
7.3.2.4	When making decisions, managers shall take account of the needs and requirements of external stakeholders together with other necessary criteria.	5	Internal External
7.3.2.5	Managers establishing the technical specifications for the design or purchase of supplies, equipment and facilities for internal use shall consider user characteristics and capabilities.	2,5	Internal

Table A.1 (continued)

	Requirement	ISO 27500 primary prin- ciple (see 4.1)	Stakeholder focus
	Managers responsible for risk assessments shall take into account risks of physical or economic harm to individuals or organizations, including risks related to:		
	— the physical work;		
7.3.2.6	— the cognitive demands;	4 7	Internal External
<u>7.3.2.0</u>	— the physical environment;	4, 7	Societal
	 chemical and biological hazards; 		
	— economic consequences; and		
	 wider environmental consequences (e.g., legal, economic, cultural, community). 		
Planning		I	
7.3.3.1	Managers planning an activity related to a product, service or system or undertaking a major development effort shall ensure that all relevant groups of stakeholders both internally and externally have been identified.	4, 7	Internal External Societal
7.3.3.2	Managers responsible for developing systems shall ensure identification and consideration of the interrelationships between each stakeholder group and other elements of the system (such as equipment, workspace, and the physical, social, and organizational environment) in order to effectively apply a total systems approach.	2	Internal External Societal
7.3.3.3	Managers responsible for activities related to creation or implementation of new systems or modification of existing systems shall establish protocols to identify requirements of all stakeholders.	3, 5	Internal External Societal
7.3.3.4	Managers responsible for activities related to changes to systems, products, or services shall identify stakeholders to ensure that such changes are evaluated and assessed from their point of view and determine how they may be impacted by the change. Follow-up activities pursuant to an evaluation or assessment shall also be evaluated and assessed.	3	Internal External Societal
7.3.3.5	Managers responsible for system changes shall assess the potential impact of these changes on stakeholders and monitor the effects of the changes during continuous process improvement and change management activities.	3, 4, 5	Internal External
7.3.3.6	Managers responsible for the development and maintenance of systems shall ensure that appropriate human-centred design methods are selected to address usability and accessibility.	2, 4	Internal External
Operatio	ons management		
<u>7.3.4.1</u>	Managers responsible for operations shall adapt procedures, tools and performance expectations according to the characteristics and capabilities of those performing the tasks involved	2, 4	Internal
7.3.4.2	Managers responsible for operations shall provide professional development opportunities for personnel through job enrichment and individual opportunities to increase knowledge and skills	1, 5	Internal
7.3.4.3	Managers responsible for operations shall identify and take account of possible and expected mismatches between task requirements and human characteristics and capabilities when establishing tasks, jobs, processes, and performance objectives.	1, 4	Internal

 Table A.1 (continued)

	Requirement	ISO 27500 primary prin- ciple (see 4.1)	Stakeholder focus
7.3.4.4	Managers responsible for human-centred system, product, and service related activities shall ensure that they are documented and that the documents are made available for development and continuous improvement efforts.	3, 6	Internal External
CONSID	ERATION OF INDIVIDUAL DIFFERENCES, USABILITY, AND ACCESSIE	BILITY	
7.4.1.2	Managers shall establish work schedules, procedures, and rules to allow and motivate personnel to use flexible work approaches that consider individual, customer and co-worker needs within the context of organizational objectives.	1, 2, 4	Internal External
<u>7.4.1.3</u>	When assigning jobs and tasks, and setting work expectations, managers shall be flexible, taking into account human resources and the range of human characteristics and capabilities of those to whom jobs and tasks will be assigned.	1, 2, 5	Internal
7.4.1.4	When establishing tasks, jobs, processes, and performance objectives, managers shall identify and address possible and expected mismatches between task requirements and human characteristics and capabilities.	1, 2, 4	Internal
<u>7.4.1.5</u>	Managers shall ensure that organizational, team and individual goals can be achieved in a safe and environmentally responsible manner.	4, 7	Internal
COMMU	NICATIONS		
Open an	d transparent communications	·	
7.5.2.1	Managers shall foster open communication to achieve and maintain trust throughout the organization.	5, 6	Internal
<u>7.5.2.2</u>	To approach and resolve difficult issues, managers shall develop and maintain effective mechanisms for engaging with personnel and their representatives as well as with external stakeholders.	5, 6	Internal External
7.5.2.3	Managers shall ensure that external stakeholders are informed of the mechanisms by which they can communicate with the organization.	6, 7	External Societal
7.5.2.4	When resolving external and societal conflict managers shall follow open and trustworthy communication practices.	7, 6	External Societal
Effectiv	e communications		
7.5.3.1	Managers shall ensure that all personnel are aware of, and have access to, all relevant policies, procedures and work practices, at least when they need them.	2,5	Internal
7.5.3.2	Managers shall ensure that communications are respectful and the communication mechanisms are both usable and accessible to all stakeholders for whom they are intended.	2,3	Internal External
7.5.3.3	Managers responsible for the organization's formal communication, both internal and external, shall establish mechanisms for stakeholder feedback.	6	Internal External
7.5.3.4	Managers shall provide opportunities for personnel to express their opinions and to share their expertise.	1, 5	Internal

Annex B (informative)

B.1 General

Each of the tables in this annex provides a checklist that is intended for use within an organization to track progress for each of the management responsibilities (<u>Clause 7</u>). Use of this checklist will assist an organization to identify those responsibilities that are already being fulfilled effectively, and those which are possibly weak or not being acted on. It can be used periodically to help track progress, or to plan management duties which can need to be modified or changed when an organization re-evaluates business goals, strategies and direction in a human-centred organization.

B.2 How to use the checklist

<u>Tables B.1</u> to <u>B.7</u> each represent one of the overall business process categories as outlined in <u>Clause 7</u> and in <u>Annex A</u>, and each table lists the relevant responsibilities.

Examples of relevant documents (including International Standards where applicable) are listed in the second column, for each responsibility, as a reference for further, more detailed information in that area. The third column shows one or more relevant stakeholder groups for each responsibility.

The fourth and fifth columns in <u>Tables B.1</u> to <u>B.7</u> can be used to note applicability and progress to date or other relevant comments, when reviewing current management responsibilities relevant to each of the stakeholder groups affected.

Users of this document may freely reproduce the tables contained in this annex for use towards the demonstration of conformance with <u>Clause 7</u>.

Table B.1 — Organizational policies

Requirement	Relevant documents	Stakeholder focus	Applicability/ Status	Comments and action items
Managers should be open and transparent about decisions,		Internal		
within the constraints of laws, regulations, and intellectual	ISO 9241-220, ISO 26800,	External		
ment and communicate clearly to internal and external stakeholders the processes followed during decision-making.	CAN/CSA Z1003-13	Societal		
Managers shall identify and understand their responsibilities	150 9241-220 150 26800	Internal		
for the protection of the health, safety and wellbeing of the peo- ple impacted by their activities.	ISO 6385, ISO/TS 18152	External		
Managers shall openly communicate with stakeholders about		Internal		
their requirements and the organization's responses to them, within the constraints of laws regulations and intellectual	ISO 9241-220, ISO 26800	External		
property and privacy considerations.		Societal		

Table B.2 — Integration

	Requirement	Relevant documents	Stakeholder focus	Applicability/ Status	Comments and action items
Ma an sid	Managers shall take account of individual differences and foster an organizational culture that is based on respect for and consideration of individual differences.	ISO 9241-220, CAN/ CSA Z1003-13	Internal		
Ma act tia] cha	Managers responsible for business, technical, and operational activities shall use a formal resolution process to resolve potential or actual mismatches between, these activities and human characteristics and capabilities.	ISO 6385, ISO/TR 7250-2, ISO 9241-5, ISO 9241-220, ISO 26800, ISO/TS 18152, CAN/CSA Z1003-13	Internal		
Ma me pro	Managers responsible for human-centred initiatives shall document the initiatives and their effects within the organization to provide a basis for future use.	ISO 9241-11, ISO 9241-20, ISO/TR 9241-100, ISO 9241- 171, ISO 9241-210, ISO 9241- 220, ISO/IEC TR 25060, IEC 62366 (all parts)	Internal		
W		00070 001 000 1700 001	Internal		
oth	needs and requirements of external stakeholders together with other necessary criteria.	150 9241-220, 150 26800	External		
Ma Sig nal	Managers establishing the technical specifications for the design or purchase of supplies, equipment and facilities for internal use shall consider user characteristics and capabilities.	ISO 9241-11, ISO 9241-20, ISO/TR 9241-100, ISO 9241- 171, ISO 9241-210, ISO 9241- 220, ISO/IEC TR 25060, IEC 62366 (all parts), ISO 26800	Internal		
Ma	_		Internal		
int div	into account risks of physical or economic harm to in- dividuals or organizations, including risks related to:		External		
a)	the physical work,				
(q	the cognitive demands,	ISO 9241-220, ISO 26800,			
င	the physical environment,	ISO 6385, ISO/TS 18152, CAN/CSA Z1003-13	Societal		
q)	chemical and biological hazards,				
(e)	economic consequences, and				
f)	wider environmental consequences (e.g., legal, economic, cultural, community).				

Table B.3 — Planning

Requirement	Relevant documents	Stakeholder focus	Applicability/ Status	Comments and action items
Managers nlanning an activity related to a product service or	ISO 9241-11, ISO 9241-20,	Internal		
system or undertaking a major development effort shall ensure that all relevant groups of stakeholders both internally and externally have been identified.	ISO/TR 9241-100, ISO 9241- 171, ISO 9241-210, ISO 9241- 220, ISO/IEC TR 25060, IEC 62366 (all parts)	External		
Managers responsible for developing systems shall ensure iden-	ISO 9241-11 ISO 9241-20	Internal		
tification and consideration of the interrelationships between	ISO/TR 9241-100, ISO 9241-	External		
as equipment, workspace, and the physical, social, and organizational environment) in order to effectively apply a total systems approach.	171, ISO 9241-210, ISO 9241- 220, ISO/IEC TR 25060, IEC 62366 (all parts)	Societal		
Managers responsible for activities related to creation or imple-	150 9241-220, 150 6385.	External		
mentation of new systems or modification of existing systems	ISO 26800, ISO/TS 18152,	Internal		
holders.	CAN/CSA Z1003-13	External		
Managers responsible for activities related to changes to sys-		External		
tems, products, or services shall identify stakeholders to ensure	180 9241-220 180 26800	Internal		
for view and determine how they may be impacted by the change. ISO 6385, ISO/TS 18152 Follow-up activities pursuant to an evaluation or assessment has be evaluated and assessed.	ISO 6385, ISO/TS 18152	External		
Managers responsible for system changes shall assess the po-		Internal		
tential impact of these changes on stakeholders and monitor the effects of the changes during continuous process improvement and change management activities.	ISO 9241-220, ISO 26800, ISO 6385, ISO/TS 18152	External		
	ISO 9241-11, ISO 9241-20,	Internal		
Managers responsible for the development and maintenance of systems shall ensure that appropriate human-centred design methods are selected to address usability and accessibility.	ISO/TR 9241-100, ISO 9241-171, ISO 9241-220, ISO/IEC TR 25060, IEC 62366 (all parts), ISO 26800, ISO 6385, ISO/TS 18152	External		

Table B.4 — Operations management

Requirement	Relevant documents	Stakeholder focus	Applicability/ Status	Comments and action items
Managers responsible for operations shall adapt procedures, tools and performance expectations according to the characteristics and capabilities of those performing the tasks involved.	ISO 9241-220, ISO 26800, ISO 6385, ISO/TS 18152, CAN/CSA Z1003-13	Internal		
Managers responsible for operations shall provide professional development opportunities for personnel through job enrichment and individual opportunities to increase knowledge and develop expertise and skills.	ISO 6385, ISO/TR 7250-2, ISO 9241-5, ISO 9241-220, ISO 26800, CAN/CSA Z1003-13	Internal		
Managers responsible for operations shall identify and take account of possible and expected mismatches among business, technical, and operational activities, and human characteristics and capabilities.	ISO 6385, ISO/TR 7250-2, ISO 9241-5, ISO 9241-220, ISO 26800, ISO/TS 18152	Internal		
Managers responsible for human-centred system, product, and service related activities shall ensure that they are documented and that the documents are made available for development and continuous improvement efforts.	ISO 9241-220, ISO 26800, ISO 6385, ISO/TS 18152, CAN/CSA Z1003-13	Internal		

Table B.5 — Considerations of individual differences, usability and accessibility

Requirement	Relevant documents	Stakeholder focus	Applicability/ Status	Comments and action items
Managers shall establish work schedules, procedures, and rules	ISO 6385, ISO/TR 7250-2.	Internal		
to allow and motivate personnel to use flexible work approaches that consider individual, customer and co-worker needs within the context of organizational objectives.		External		
When assigning jobs and tasks, and setting work expectations, managers shall be flexible, taking into account human resources and the range of human characteristics and capabilities of those to whom jobs and tasks will be assigned.	ISO 6385, ISO/TR 7250-2, ISO 9241-5, ISO 9241-220, ISO 26800, CAN/CSA Z1003-13	Internal		
When establishing tasks, jobs, processes, and performance objectives, managers shall identify and address possible and expected mismatches between task requirements and human characteristics and capabilities.	ISO 6385, ISO/TR 7250-2, ISO 9241-5, ISO 9241-220, ISO 26800, ISO/TS 18152	Internal		
Managers shall ensure that organizational, team and individual 180 9241-220. ISO 6385.	ISO 9241-220. ISO 6385.	Internal		
goals can be achieved in a safe and environmentally responsi-	ISO 26800, ISO/TS 18152,	External		
ble manner.	CAN/CSA Z1003-13	Societal		

Table B.6 — Communication: Open and Transparent

Requirement	Relevant documents	Stakeholder focus	Applicability/ Status	Comments and action items
Managers shall foster open and respectful communication to achieve and maintain trust throughout the organization.	ISO 9241-220, ISO 26800	Internal		
To approach and resolve difficult issues, managers shall de-		Internal		
velop and maintain effective mechanisms for engaging with personnel and their representatives as well as with external stakeholders.	ISO 9241-220 ISO 26800, CAN/ CSA Z1003-13	External		
Managers shall ensure that external stakeholders are informed of the mechanisms by which they can communicate with the organization.	ISO 9241-220, ISO 26800	Societal		
When resolving external and societal conflict, managers shall	031 024 120 031	External		
follow open and trustworthy communication practices.	130 9241-220, 130 20000	Societal		

Table B.7 — Communication: Effective

Requirement	Relevant documents	Stakeholder focus	Applicability/ Status	Comments and action items
Managers shall ensure that all personnel are aware of, and have access to, all relevant policies, procedures and work practices, at least when they need them.	ISO 9241-11, ISO 9241-20, ISO/ TR 9241-100, ISO 9241-71, ISO 9241-210, ISO 9241-220, ISO/IEC TR 25060, IEC 62366 (all parts), ISO 26800, CAN/ CSA Z1003-13	Internal		
	ISO 9241-11, ISO 9241-20, ISO/	Internal		
Managers shall ensure that communications are respectful and that communication mechanisms are both usable and accessible to all stakeholders for whom they are intended.	TR 9241-100, ISO 9241-171, ISO 9241-210, ISO 9241-220, ISO/IEC/TR 25060, IEC 62366 (all parts), ISO 26800, ISO 6385, ISO/TS 18152	External		
Managers responsible for the organization's formal communication, both internal and external shall establish mechanisms for stakeholder feedback.	ISO 9241-220, CAN/ CSA Z1003-13	Internal		
Managers shall provide opportunities for personnel to express their opinions and to share their expertise.	ISO 9241-5, ISO 9241-220, ISO 6385, ISO/TR 7250-2, ISO 26800, CAN/CSA Z1003-13	Internal		

Bibliography

- [1] ISO 6385, Ergonomics principles in the design of work systems
- [2] ISO 9241-5, Ergonomic requirements for office work with visual display terminals (VDTs) Part 5: Workstation layout and postural requirements
- [3] ISO 9241-11, Ergonomics of human-system interaction Part 11: Usability: Definitions and concepts
- [4] ISO 9241-20, Ergonomics of human-system interaction Part 20: Accessibility guidelines for information/communication technology (ICT) equipment and services
- [5] ISO/TR 9241-100, Ergonomics of human-system interaction Part 100: Introduction to standards related to software ergonomics
- [6] ISO 9241-171, Ergonomics of human-system interaction Part 171: Guidance on software accessibility
- [7] ISO 9241-210, Ergonomics of human-system interaction Part 210: Human-centred design for interactive systems
- [8] ISO 9241-220, Ergonomics of human-system interaction Part 220: Processes for enabling, executing and assessing human-centred design within organizations
- [9] ISO 26000, Guidance on social responsibility
- [10] ISO 26800, Ergonomics General approach, principles and concepts
- [11] ISO 27500, The human-centred organization Rationale and general principles
- [12] ISO 28803, Ergonomics of the physical environment Application of International Standards to people with special requirements
- [13] ISO 30408, Human resource management Guidelines on human governance
- [14] ISO 31000, Risk management Guidelines
- [15] ISO/TR 7250-2, Basic human body measurements for technological design Part 2: Statistical summaries of body measurements from national populations
- [16] ISO/TS 18152, Ergonomics of human-system interaction Specification for the process assessment of human-system issues
- [17] ISO/IEC TR 25060, Systems and software engineering Systems and software product Quality Requirements and Evaluation (SQuaRE) Common Industry Format (CIF) for usability: General framework for usability-related information
- [18] IEC 62366 (all parts), Medical devices Application of usability engineering to medical devices
- [19] CAN/CSA-Z1003-13/BNQ 9700-803/2013 Psychological health and safety in the workplace Prevention, promotion, and guidance to staged implementation
- [20] OSHAS 45001 Occupational health and safety systems requirements with guidance for use
- [21] BERRY L.L. The employee as customer. J. Retailing. 1981, 3 (March) pp. 33-40
- [22] BOWERS M.R., MARTIN C.L., LUKER A. Trading places: Employees as customers, customers as employees. *J. Serv. Mark.* 1990, **4** (2) pp. 55–69

- [23] BRYAN A., & MAIGNAN L.I. Striving for quality: The key role of internal and external customers. *Journal of Market-Focused Management.* 1996, **1** (2) pp. 175–187
- [24] GRÖNROOS C. Internal marketing an integral part of marketing theory. In: *Marketing of services*, (DONNELLY J.H.Jr, & GEORGE W.R. eds.). American Marketing Association, Chicago, 1981, pp. 236–8
- [25] GRÖNROOS C. Service logic revisited: Whose value? And who Co-Creates? *Eur. Bus. Rev.* 2008, **20** (4) pp. 298–314
- [26] International Ergonomics Association web site. www.iea.cc
- [27] PRAHARAD C.K., & VENKAD R. The future of competition: Co-creating unique value with customers. Harvard Business School Press, Boston, 2004
- [28] Toya K. A model for measuring service co-created values. MBS Review. 2014, 11 pp. 29–38
- [29] VARGO S.L., & LUSCH R.F. Evolving to a new dominant logic for marketing. *J. Mark.* 2004, **68** (1) pp. 1–17
- [30] VARGO S.L., & LUSCH R.F. Service-dominant logic: continuing the evolution. *J. Acad. Mark. Sci.* 2008, **36** (1) pp. 1–10
- [31] Wikström S. Value creation by company-consumer interaction. *Journal of Marketing Management*. 1996, **12** pp. 359–374

