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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT
International
Standard

ISO/DIS 25556

Ageing societies — General requirements and guidelines for ageing-inclusive digital economy

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ISO/TC 314

Secretariat: **BSI**

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This document is circulated as received from the committee secretariat.

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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).

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This document was prepared by Technical Committee ISO/TC 314, *Ageing societies*.

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

0.1 General

The fourth industrial revolution characterized by rapid digital innovation and exponential growth has transformed all sectors of society, including how we live, work and, relate to one another. Digital technology can assist in learning new skills, facilitate social interactions, foster independent and autonomous ways of living, and improve the management and delivery of public health and social care services. However, this does not mean that everyone and everything would be connected or digitised. Nor does it mean that the social and economic consequences of digital technology are necessarily inclusive or beneficial. Digital technology can both provide opportunity and accentuate inequality. In fact, not everyone can equally benefit from them. The COVID-19 pandemic has highlighted unequal access to digital technology across and within ageing societies.

Products and services are increasingly provided online. In ageing societies, some people are more likely to be digitally excluded and to experience barriers to accessing products and services online. They either lack access to technologies or often fail to benefit fully from the opportunities provided by technological progress. Digital exclusion can reduce opportunities for active and healthy ageing, including social and economic participation. The challenge is more than just only empowering people through offering access to digital technology and enhancing digital literacy. It is also essential to ensure ageing-inclusive design and relevance of digital services and products, as well as ageism-free, ethical, and safe digital environments that embrace the diversity of older persons.

Establishing ageing-inclusive digital economies (and related standardization) is not only significant but urgent. This document intends to respond to the context and demands of rapidly evolving digital economies, by providing general requirements and guidelines for ageing-inclusive digital economies, from the perspective of the needs of ageing societies, and solving common problems of an ageing-inclusive digital economy.

0.2 Challenges of digitalisation in ageing societies

The potential challenges that some people might face in this era of digitalisation and ageing populations include:

- maintaining social connectedness including connectedness to family members living apart;
- accessing digital communities which maintain social connections and obtain the latest information;
- working online by using the Internet and mobile devices;
- seeking employment using digital tools;
- participating in online learning;
- accessing digital services, e.g., online shopping, and smart transportation systems;
- accessing medical and health care online, as well as electronic personal health records, e.g., online diagnosis and treatment;
- using digital safety tools and measures, e.g., using smart devices to make an emergency call.

0.3 How can digitalisation support ageing societies?

Digital economies can support ageing societies in multiple ways, for example:

- Visual capabilities: It can be increasingly challenging for older people to read texts written in small fonts. Therefore, the text that can easily be enlarged and/or compatibility with the use of screen magnifiers and screen readers may be essential.
- Hearing capabilities: Accessible content that includes options for communicating with people with hearing difficulties, such as the availability of chats or messaging as an alternative to voice services.

Accessible content also needs to be compatible with hearing aid devices, for example, accessible smart TVs.

- Motor ability: To accommodate people with decreased motor skills, accessible information and communication technology (ICT) should be designed to interact seamlessly without requiring precise motor control. It should also support assistive technologies for optimal usability. For example, large clickable areas that include labels, especially for smaller controls, such as radio buttons and checkboxes are an accessibility feature that is important for people with limited dexterity.
- Cognitive capabilities: Some people may find it increasingly difficult to find specific information or recognize and access hyperlinks. It is important to consider these issues of usable and accessible designs. Making content easy to read and adding helpful features like reminders can make access easier.
- Communicating with the people responsible for websites or mobile APPs is sometimes challenging: Accessible and easy customer support channels is important in order to help all customers.
- Social connection and isolation: Social connection can be increased through various ICT-related activities such as: digital training and education, online peer-to-peer learning, and providing support for sharing information.
- Vitality: People may experience a loss of vitality. E-health, telehealth and health Apps can encourage healthy behaviour, monitor health and wellbeing.

It is important to recognise that everybody ages differently and people become more diverse as we age. EXAMPLE Independent, assistance, IADL (Instrumental Activity Daily Living), ADL (Activity Daily Living).

NOTE See ITU “Ageing in a digital world – from vulnerable to valuable” (2021) for more information.

Ageing societies — General requirements and guidelines for ageing-inclusive digital economy

1 Scope

This document is intended to provide general requirements and guidelines for ageing-inclusive digital economy.

This document specifies the principles, areas, scenarios, actions, and checklist for establishing or transforming the ageing-inclusive digital economy, excluding the specific information technology, ergonomics, as well as other technical requirements and guidelines.

It is applicable to policymakers, administrations, organizations, and other stakeholders (e.g., consumer organizations, organizations for older persons) of digital economy.

This document is aimed at enhancing the applicability and credibility of ageing-inclusive digital economy, protecting consumers by preventing ageism, and improving the quality of ageing-inclusive digital economy for all stakeholders.

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 terminology databases for use in standardization at the following addresses:

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

3.1

ageing

natural progression of an individual's characteristics over time

Note 1 to entry: The impact of ageing will vary at different ages.

Note 2 to entry: The concept of ageing is very broad and comprehensive, and may include chronological ageing, biological ageing, psychological (psychosocial) ageing, cognitive ageing, functional ageing, social ageing, organizational age, and career age. See ISO 25550:2022 for more information.

[SOURCE: ISO/IEC TR 22116:2021, 3.2 – modified, added Note 2 to entry]

3.2

ageing society

demographics of an older population that shifts overtime

[SOURCE: ISO 25550:2022, 3.1]

3.3

older person

people aged 60 years and older

[SOURCE: WHO, Ageing and health, 2022]

Note 1 to entry: There is no typical older person. Some 80-year-olds have physical and mental capacities similar to many 30-year-olds. Other people experience significant declines in capacities at much younger ages.

Note 2 to entry: By 2030, 1 in 6 people in the world will be aged 60 years or over. At this time the share of the population aged 60 years and over will increase from 1 billion in 2020 to 1,4 billion. By 2050, the world's population of people aged 60 years and older will double (2,1 billion). The number of persons aged 80 years or older is expected to triple between 2020 and 2050 to reach 426 million.

3.4

diversity

characteristics of differences and similarities between people

Note 1 to entry: Diversity includes factors that influence the identities and perspectives that people bring when interacting in digital economy.

[SOURCE: ISO 25550:2022, 3.10 – modified, changed “at work” to “in digital economy”, and deleted Note 2 to entry]

3.5

inclusion

inclusiveness

process of including all stakeholders

Note 1 to entry: This involves stakeholders from different groups being accepted, welcomed, enabled to have a voice, and to develop a sense of belonging.

[SOURCE: ISO 25550:2022, 3.11– modified, deleted “in organizational contexts”, deleted Note 1 to entry, deleted Note 2 to entry, and changed “Note 3 to entry” to “Note 1 to entry”]

3.6

ageing-inclusive

including all stakeholders in *ageing* (3.1) contexts where people of diverse ages are treated fairly and equally and included in all aspects

[SOURCE: ISO 25550:2022, 3.11 – modified, changed “age” to “ageing”, changed “organization” to “ageing”, deleted “of the organization”]

3.7

digital economy

economic activity and related social affair reliant on, or significantly enhanced by the use of digital inputs

Note 1 to entry: Including digital technologies, digital infrastructure, digital services and data.

Note 2 to entry: Referring to all producers and consumers, including governments, utilizing these digital inputs in their economic activities.

[SOURCE: A Roadmap Toward a Common Framework for Measuring the Digital Economy: Report for The G20 Digital Economy Task Force – modified, deleted “all”, added “and related social affair”]

3.8

ageing-inclusive digital economy

digital economy (3.7) which is accessible, available, affordable, relevant, fair, and equal to all stakeholders in *ageing* (3.1) contexts for combating *ageism* (3.16)

3.9

digital infrastructure

infrastructure driven by data and technology, based on the communication network, and centred on data computing facilities

3.9.1

information infrastructure

Information Technical Infrastructure

Connectivity Infrastructure

Digital infrastructure (3.9) for data perception, acquisition, transmission, storage and calculation, including communication network infrastructure, new technology infrastructure, computing infrastructure

EXAMPLE IOT, 5G communication, industrial internet, satellite internet, AI, cloud computing, blockchain, data centre, intelligent computing centre.

3.9.2

converged infrastructure

application infrastructure

social infrastructure

digital infrastructure (3.9) for digital technology application, digital transformation of traditional industry, and serving people directly and/or indirectly, including a variety of hardware and software infrastructure

EXAMPLE Intelligent transportation infrastructure, intelligent energy infrastructure, smart community infrastructure

3.9.3

digital public infrastructure

digital infrastructure (3.9) such as identification (ID) platforms, payment platforms, and data exchange systems that help governments deliver vital services to their people

[SOURCE: OECD, Development Co-operation Report 2021, 2021 – modified, changed “Platforms” to “Digital infrastructure”, “platforms” added after “identification (ID)” and “payment”, changed “countries” to “governments”]

3.10

digital public goods

types of open-source software, models, standards and content that governments can use to operationalise their *digital public infrastructure* (3.9.3)

[SOURCE: OECD, Development Co-operation Report 2021, 2021 – modified, changed “countries” to “governments”, “e.g., payment and data exchange systems” and Notes to entry added]

Note 1 to entry: Digital public goods make *digital public infrastructure* (3.9.3) an operational reality.

Note 2 to entry: Governments can adapt digital public goods with technical and/or financial support from development cooperation partners, and can contract support from the private sector where appropriate.

3.11

user

customer

individual using *ageing-inclusive digital economy* (3.8)

[SOURCE: ISO 20294:2018, 3.4.5 – modified, changed “e-media” to “ageing-inclusive digital economy”]

3.12

policymaker

government department, legislature, or other organization who is responsible for making rules, laws, regulations, etc. for digital economy and related issues

3.13

administration

government, agent, or other organization who is authorized to supervise digital economy and related issues

3.14

organization

public or private entity or partnership with the responsibility for the operation of digital economy or part of it

EXAMPLE Relevant digital infrastructure owner, intelligent product manufacturer, digital service provider, digital platform operator, digital environment operator, and employer adopting digital work approach.

3.15

social media

online technologies and practices that people use to share opinions, insights, experiences and perspectives with each other, transforming traditional one-to-many interactions into many-to-many interactions

[SOURCE: ISO 690:2021, 3.43]

3.16

marginalized group

group of people within a given culture, context and history at risk of being subjected to multiple discrimination due to the interplay of different personal characteristics or grounds, such as sex, gender, age, ethnicity, religion or belief, health status, disability, sexual orientation, gender identity, education or income, or living in various geographic localities

[SOURCE: ISO 25551:2021, 3.18]

3.17

ageism

stereotyping, prejudice, and discrimination against people on the basis of their age

Note 1 to entry: Ageism takes many forms, including prejudicial attitudes, discriminatory practices, or institutional policies and practices that perpetuate stereotypical beliefs.

[SOURCE: 25550:2022, 3.17]

3.18

accessibility

extent to which products, systems, services, environments and facilities can be used by *users* (3.11) with the widest range of user needs, characteristics and capabilities to achieve identified goals in identified contexts of use

[SOURCE: ISO 25550:2022, 3.2 – modified, changed “people from a population” to “users”]

3.19

availability

degree to which a facility or service is available to *users* (3.11) when needed

[SOURCE: ISO/IEC TS 25011:2017, 3.2.4.3 - modified, changed “an IT service” to “a facility or service”]

3.20

affordability

ability to be economically bearable for the target *users* (3.11)

[SOURCE: ISO 24511:2007, 2.2 - modified, added “target” before “users”, deleted Note to 1]

3.21

usability

extent to which an infrastructure, system, product or service can be used by specified *users* (3.11) to achieve specified goals with effectiveness, efficiency, convenience, safety, and satisfaction in a specified context of use

[SOURCE: ISO 19869:2019, 3.2.8 - modified, added “infrastructure,”, added “convenience, safety”]

3.22

security

combination of availability, confidentiality, integrity, and accountability

[SOURCE: ISO 17090-1:2021, 3.2.24]

3.23

privacy

right of an entity (normally an individual or an organization), acting on its own behalf, to determine the degree to which the confidentiality of their private information is maintained.

[SOURCE: ISO/IEC 24775-2:2021, 3.1.46, modified, deleted “the”]

3.24

active assisted living

AAL

concepts, products, services, and systems combining technologies and social environment with the aim of improving the quality of people’s lives

[SOURCE: ISO 25552:2022, 3.26]

3.25

active assisted living service

AAL service

action or function of an AAL system creating an added value for customers

EXAMPLE An AAL service could comprise, for example

- configuration and maintenance of AAL systems,
- assistant systems to support the home environment.

Note 1 to entry: An AAL service can consist of several individual services.

[SOURCE: ISO 25552:2022, 3.27]

3.26

assistive technology

equipment, product system, hardware, software or service that is used to increase, maintain or improve capabilities and safety of individuals

Note 1 to entry: Assistive technology can include assistive services and professional services needed for assessment, recommendation, and provision.

[SOURCE: ISO 25552:2022, 3.28]

3.27

inclusive service

design of a service, service-related product or service environment that enables access and use by as many individuals as possible, regardless of their personal circumstances

Note 1 to entry: It can be fair and reasonable, in some cases, for an inclusive service provider to limit access for individuals outside of the organization's target audience, where the main objective is to protect consumers and prevent harm. For example, preventing children from accessing online gambling sites.

[SOURCE: ISO 22458:2022, 3.8]

4 Principles for ageing-inclusive digital economy

4.1 Combatting ageism

4.1.1 General

Ageism refers to stereotypes, prejudice, and discrimination directed toward others or ourselves based on age. Specifically for older persons, ageism is associated with a shorter lifespan, poorer physical and/or mental health, and decreased quality of life. It also contributes to poverty and financial insecurity in some older age and can limit the quality and quantity of health care provided to some older persons.

Ageism is often replicated in the digital economy, just as other implicit and explicit biases of society, which can partly cause a digital divide between some younger and older persons. The prevailing stereotype that older persons cannot master technologies is already internalized by some older persons themselves (an example of self-directed ageism), who may therefore not even try to adopt new technologies, even when they are both available (see [4.4](#)) and affordable (see [4.5](#)).

Challenging ageism is critical to well-being and human rights. Organizations can eliminate ageism in the digital economy.

4.1.2 Requirements

The organization shall:

- a) address ageism to ensure that digital economy is designed, developed, tested, implemented, and evaluated appropriately, equitably, and responsibly;
- b) take measures to identify and decrease ageism in digital economy, to:
 - 1) minimize the risk of ageism, and
 - 2) maximize the digital economy inclusion and benefits for older persons.

EXAMPLE 1 Involving older persons directly in design and development.

EXAMPLE 2 Enhancing the inter-generational communication in implementation and evaluation.

NOTE See WHO “Ageism in artificial intelligence for health: WHO policy brief” (2022) for more information.

4.1.3 Recommendations

The organization should:

- a) design, develop, test, implement, and evaluate the ageing-inclusive digital economy by, with, and for older persons, especially on behalf of older persons, including:
 - 1) provide opportunities for older persons to participate in digital economy design, development, test, implementation, and evaluation, as well as the relevant training and guidance;

NOTE The training and guidance cover the setting, the tools, the methods, and the stage of design, development, test, implementation, and evaluation process in which older persons are involved.
 - 2) maintain a digital economy multiple-generation workforce (MGW) in digital economy to recognize the views of different generations;
 - 3) train the multiple-generation workforce, irrespective of age, in both recognizing and avoiding ageism when approaching their tasks, and in their perception or recognition of ageing.

NOTE See WHO “Ageism in artificial intelligence for health: WHO policy brief” (2022) for more information.

- b) overcome and decrease forms of ageism and stereotype by capturing and respecting the heterogeneity of older persons and offering them more activities, products, and opportunities for self-fulfilment

rather than only for health care and chronic disease management, e.g., entertainment, leisure, learning, productivity (work or other income-generating opportunities), sharing their knowledge and skills with younger generations, service to the community;

- c) offer equal opportunities to older persons for to participate in digital economy activities, to avoid the ageist cycles of injustice both in inputs and outputs, for example but not limited to:
 - 1) offer the options such as “retired” in forms which require disclosing occupational information;
 - 2) offer the options of avatars, portraits, and virtual images with some symbols of some older persons, e.g., silver hair for free;
 - 3) conduct online recruitment by using algorithms without age bias.

4.2 Accessibility

4.2.1 General

The goal of accessibility for an ageing-inclusive digital economy is to guarantee that people with progressive functional decline, disabilities, and impairments related to age, can perceive, understand, navigate, and interact with intelligent products, digital services, digital platforms, and/or digital environments by assistive technology.

4.2.2 Requirements

The organization shall:

- a) present information that uses plain and non-discriminatory language;
Note See ISO 24495-1:2023 for more information about plain language.
- b) design and present the structure and hierarchy of websites, APPs, electronic documents, and other digital assets, e.g., navigation features, user interface, in an easy to operate way that can interact with the users with progressive functional decline, disabilities, and impairments related to age;
- c) ensure the intelligent product, digital service, digital platform, and digital environment can be interpreted by a wide variety of possible user agents, e.g., assistive technologies.

NOTE See ISO/IEC 40500:2012 for more information.

4.2.3 Recommendations

The organization should:

- a) present information that is:
 - 1) accessible in multiple channels, e.g., tablets, smartphones, computers;
 - 2) accessible to all user types regardless of sensory abilities/restrictions, i.e., users can perceive it through any of their senses; and
 - 3) that accommodates multiple language users.
- b) provide users with easy-to-understand captions and descriptions for audio and video content respectively;
- c) offer users a n easy to use button that increases text size without loss of content or functionality;
- d) provide ample time for users to read and understand content;
- e) pause, stop, or hide the content that automatically moves, blinks, or scrolls and lasts longer than 5 seconds;

- f) not use colour as the only way to convey information;
- g) provide legible labels when content requires input from users;
- h) avoid the interference and/or conflict with assistive technology and devices;

EXAMPLE 1 Pacemaker can be influenced by a strong magnetic field or current.

EXAMPLE 2 Hearing aids can increase environmental noise and generate new electromagnetic noise when working in a digital environment.

- i) use the elements with complete start and end tags, which are nested according to their specifications.

4.3 Usability

4.3.1 General

Usability relates to the quality of the experience when people engage and interact with the ageing-inclusive digital economy, the efficiency of accomplishing, and the satisfaction of completing a task.

Many functions may decline as people age, e.g., eyesight, hearing, speech, memory, balance, manual dexterity, and skin sensitivity. Also, some older persons may need much more time to encode, retrieve, and process information, and make decisions.

Usability and accessibility (see 4.2) are slightly different lenses for ageing-inclusive digital economy. The goal of accessibility is to ensure that people can complete tasks using technology, whereas usability seeks to deliver quality, effective, and satisfying experiences for all users.

Although a website equipped with assistive technology according to the W3C Web Content Accessibility Guidelines (WCAG) might be accessible, the website may not be usable for booking hotels. Conversely, an APP can be considered usable for hailing a taxi, yet it may ignore the accessibility guidelines developed for the users.

4.3.2 Requirements

The organization shall take the changing needs of ageing into account in the usability by design. In addition to accessibility, such as but not limited to:

- a) keep the interface, layout, and navigation stable and similar if possible;
- b) reduce the update frequency of an APP, website, software, and other digital resources if possible;
- c) limit the displayed information to necessary content, if possible;
- d) avoid overly distracting advertisements;
- e) simplify the operation and slowing the speed of processing;
- f) provide multi-sensory navigation.

4.3.3 Recommendations

The organization should:

- a) create a variety of topics and content for a broad range of interests, preferences, expectations, and needs of users, which are not limited based on the stereotypes of ageing;
- b) arrange content by topic, not by age or demographic characteristics;
- c) provide content and information in a direct and objective style avoiding any a misleading or sensationalized styles;