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Ageing societies — Guidance for enhancing safety and usability of smart home products, services, and systems for older persons in smart home environment

Vieillissement de la population — Recommandations pour l'amélioration de la sécurité et de l'aptitude à l'emploi des produits, des services et des systèmes pour maisons intelligentes destinés aux personnes âgées dans un environnement de maison intelligente

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This document was prepared jointly by Technical Committee ISO/TC 314, *Ageing societies*, and Technical Committee IEC/SyC AAL, *Active Assisted Living*.

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Introduction

According to World Population Prospects 2024[1], the world population is expected to grow from 8,2 billion in 2024 to 10,3 billion in the mid-2080s. The report shows that the share of the world's population aged 65 and over has nearly doubled in the last 50 years (1974 to 2024), from 5,5 % to 10,3 %, and is expected to double again in the next 50 years (2024 to 2074), to 20,7 %. In addition, the number of people aged 80 and over is expected to triple during the same period**.**

The economic growth of modern society and recent developments in medicine, public health, and medical technologies have led to an increase in life expectancy and an upward trend in the global ageing population. Virtually every country in the world is experiencing growth in the number and proportion of older persons in their population. Although the situation varies from country to country, many countries that are already at an advanced stage of population ageing are preparing and implementing policies and measures to address the challenges and opportunities of an ageing society.

The United Nations Principles for Older Persons[2] encourage countries to incorporate the principles of independence, participation, care, dignity, and self-fulfilment into their national programmes for older persons. Reflecting these societal needs and the desires of older persons, the direction of policies in countries preparing for an ageing society also focuses on how to implement these policies and programmes. The orientation to life in an ageing society is being explained in concepts such as "ageing in place" [CDC (Centre for Disease Control and Prevention)], "active ageing" [(European Commission, WHO (World Health Organization)], and "Healthy ageing" [PAHO (Pan American Health Organization), WHO].

The concept of ageing in place has gained significant attention in the context of global population ageing. Most older persons wish to age in place as long as possible as it fosters a sense of identity, independence, and connectedness. Ageing in place means having access to services and the health and social support older persons need to live safely and independently in their homes or communities. Policies and programmes that support ageing in place have emerged as priorities in many countries.

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The rapid development of information and communication technology (ICT) is highly promising in fostering active and healthy ageing. Smart homes with several assistive technologies provide various benefits for older adults and their carers who want to live independently in the comfort of their homes and improve their quality of life (QoL).

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The variety of devices that now populate the smart home – smart speakers and voice assistants, smart thermostats, smart lighting systems, smart appliances, smart security systems, wearable devices, smart TVs, entertainment systems, and more – is becoming part of day-to-day life. The COVID-19 pandemic has led to an increased use of technology in consumers' homes and continues to shape the attitude of older adults towards their use of technology and their interest in aging in place. The use of these smart devices is becoming more common due in part to the health conditions of older persons, and it is expected that older persons can improve their QoL by gradually adapting to a smart home environment. While older persons and their carers recognize the potential value of smart home technology, there are concerns about adopting and accepting it.

This document provides guidance on considering the safety and usability of smart home products, services, and systems as an important step in helping older persons and their carers use smart home devices effectively, efficiently, and satisfactorily. The needs, interests, and experiences of older persons and their carers need to be considered when developing products, services, and environments for smart home technology used by older persons.

In addition to the guidance provided in this document, it is important to understand that there are also ethical and equity concerns with smart home technology for older persons, including data and privacy protection, access, affordability, social isolation, digital literacy, cognitive abilities, and cultural differences. Older persons are by no means the only group affected by digital exclusion – for example, people living with disabilities, people on low incomes, people with long-term health conditions, and those living in rural or remote areas face barriers in a digital world. While these issues are beyond the scope of this document, other standards, policies, and programmes established to support the implementation of the "ageing in place" strategy will be part of integrated solutions.

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Ageing societies — Guidance for enhancing safety and usability of smart home products, services, and systems for older persons in smart home environment

1 Scope

This document provides guidance for enhancing safety and usability aspects of smart home products, services, and systems to enable older persons to live the healthy lives they desire. It presents a process to assess the needs of older persons who use smart products, services, and systems in the smart home, the general living space of the future society, to select, apply, and evaluate appropriate smart home products, services, and systems.

This document addresses older persons' safety and usability needs as their health conditions and lifestyles change. It applies to designers, developers, and providers of smart homes for older persons and products, services, and systems in smart homes.

2 Normative references

There are no normative references in this document.

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3 Terms, definitions and abbreviated terms

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

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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 Terms and definitions

3.1.1
smart home
residence equipped with a smart electrical installation

[SOURCE: IEC 60050-617:2009, 617-04-29]

3.1.2
smart home product
tangible devices and appliances that are digitally interconnected and provide a level of automation to provide enhanced services to household residents

Note 1 to entry: Adapted from Reference [17].

3.1.3
safety
freedom from unacceptable risk

[SOURCE: ISO 22287:2024, 3.15]

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