

# SYSTEMS REFERENCE DELIVERABLE



**Safety aspects – Guidelines for adult AAL care recipients in standards and other specifications**

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INTERNATIONAL  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SAFETY ASPECTS – GUIDELINES FOR ADULT AAL CARE RECIPIENTS IN STANDARDS AND OTHER SPECIFICATIONS**

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The text of this Systems Reference Deliverable is based on the following documents:

Draft	Report on voting
SyCAAL/370/DTS	SyCAAL/374/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Systems Reference Deliverable is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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## INTRODUCTION

As the world population continues to experience increases in physical and cognitive limitations, a thorough understanding of the special needs/concerns of the active assisted living (AAL) care recipients is important so that these aspects can be considered in the development of technology and service standards. Ensuring the safety of an AAL user is a shared responsibility. Injury prevention can be addressed through design, engineering, manufacturing controls, legislation, education and raising awareness. These guidelines aim to provide information for consideration by providing specifications related to areas identified based on an extensive series of AAL use cases.

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# SAFETY ASPECTS – GUIDELINES FOR ADULT AAL CARE RECIPIENTS IN STANDARDS AND OTHER SPECIFICATIONS

## 1 Scope

This document supports the experts in identifying hazards when developing and revising standards, specifications, and similar publications that deal with products and services for adult AAL care recipients. This document aims to address potential sources of bodily harm to adult AAL care recipients from products they use or are likely to contact, even if not explicitly intended for adult AAL care recipients.

This document provides valuable information for stakeholders in the absence of a specific standard.

Stakeholders can include auditors, safety inspectors, product designers, architects, interior home designers, installers, etc.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-871, *International Electrotechnical Vocabulary – Part 871: Active assisted living (AAL)* (available at [www.electropedia.org](http://www.electropedia.org))

IEC TS 63134, *Active assisted living (AAL) use cases*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-871 and the following apply.

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

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

### 3.1

#### **risk**

combination of the probability of occurrence of harm and the severity of that harm

[SOURCE: IEC 60050-351:2013, 351-57-03]



**3.2****hazard**

potential source of harm

Note 1 to entry: The term hazard may be qualified in order to define its origin or the nature of the expected harm (e.g., electric shock hazard, crushing hazard, cutting hazard, toxic hazard, fire hazard, drowning hazard).

[SOURCE: IEC 60050-351:2013, 351-57-01]

**3.3****injury**

damage to the body caused by trauma

**3.4****harm**

physical injury or damage to persons

[SOURCE: IEC 60050-903:2013, 903-01-01, modified – The words "property and livestock" have been removed at the end of the definition.]

**3.5****adult**

person who is over 18 years of age

Note 1 to entry: Definition of adult varies per country/region.

**3.6****AAL care recipient**

person who receives and consumes AAL care services

Note 1 to entry: The concept denoted by the term "AAL user" (IEV 871-02-05) includes a wider range of people, including people who do not necessarily require AAL care services.

[SOURCE: IEC 60050-871:2023, 871-02-18]

**3.7****ADL****activity of daily living**

basic human action that involves physical self-maintenance ability

Note 1 to entry: ADL comprises the following six areas: transferring; bathing; eating; dressing; continence; grooming and toileting.

[SOURCE: IEC 60050-871:2023, 871-01-10]

**3.8****IADL**

instrumental activity of daily living

human action that involves physical/social/cognitive skills related to independent living in addition to ADL

Note 1 to entry: IADL includes various actions: transportation, communication (i.e., use of a phone, e-mails), shopping, meal preparation, housekeeping, managing medications and managing personal finances.

[SOURCE: IEC 60050-871:2023, 871-01-12]

### 3.9

#### AAL

#### level of assistance

designation indicating the degree of assistance needed by an AAL care recipient

Note 1 to entry: There are four AAL levels of assistance:

Level 0 – Independent: able to live independently with minimal assistance.

Level 1 – Some assistance: able to live independently but some assistance is needed occasionally (not on a permanent basis).

Level 2 – Assistance with IADL: level of assistance that involves physical/social/cognitive skills related to independent living in addition to ADL. This can include transportation, communication (i.e. use of telephone, e-mails), shopping, meal preparation, housekeeping, managing medications and managing personal finances.

Level 3 – Assistance with ADL: level of assistance that includes basic human activities like walking and moving around, going up a few steps, bathing (plus eating, clothing, continence, grooming).

[SOURCE: IEC 60050-871:2023, 871-07-03]

## 4 General approach to adult AAL care recipient safety

### 4.1 General

AAL systems are developed based on user requirements from the use case categories described in IEC TS 63134, i.e. safety, security, privacy, resilience, usability, accessibility, and training. This document deals with the safety aspects of the user requirements.

When developing or revising a standard for a product for adult AAL care recipients, stakeholders should consider if and how the AAL care recipient will interact with that product or service. As the level of physical, cognitive and social abilities can vary widely, care should be taken upon assessment to provide awareness of the range of physical, cognitive and social skills which have been considered. The safety concepts that distinguish adult AAL care recipients' safety, in general, are explained in this Clause 4.

Adult AAL care recipients can have limitations in one or more of the following areas:

- a) Physical limitation – A physical limitation, as defined here, refers to have difficulty performing physical activities.
  - Dexterity – AAL care recipients' ability to manipulate an object, for example, doorknobs.
  - Stability – AAL care recipients' ability to stand and move about including the ability to stand-up from a sitting position.
  - Touch/tactile – includes the AAL care recipients' ability to sense/feel. This includes areas such as temperature, pressure, vibration, shaking, changes in topography.
  - Visual – Impairment and limitations can range from slight seeing impairments to complete blindness (including colour blindness).
  - Hearing (audible) – Impairment can range from slight hearing impairment to complete deafness. In addition, it should be considered that the audible input received can be insufficient or distorted auditory information.
  - Speaking (verbal) – Impairments include voicelessness (aphonia), defective use of the voice (dysphonia), hoarseness, stammering and stuttering.
  - Smell/taste – Impairments and limitations due to reduced and / or distorted taste and smell functions.
- b) Cognitive limitations
  - Cognitive limitations can vary greatly for an AAL care recipient as difficulty with one or more of the basic functions of the brain: perception, memory, expression and processing skills is often related to the AAL levels of care.