

# SYSTEMS REFERENCE DELIVERABLE



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

IECNORM.COM : Click to view the full PDF of IEC SRD 63408:2024



**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2024 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

**About the IEC**

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

**About IEC publications**

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

**IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)**

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

**IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)**

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

**IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)**

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

**IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)**

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

**Electropedia - [www.electropedia.org](http://www.electropedia.org)**

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IECNORM.COM : Click to view the full PDF (IEV) 63408:2024



# SYSTEMS REFERENCE DELIVERABLE



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

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 11.020.99; 11.180

ISBN 978-2-8322-9967-8

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 General approach to adult AAL care recipient safety .....	8
4.1 General.....	8
4.2 Risk assessment.....	9
4.2.1 General .....	9
4.2.2 Preventing and reducing harm .....	10
4.2.3 Risk control measures .....	10
5 Hazards related to adult AAL care recipient .....	10
5.1 General.....	10
5.2 Fall hazards .....	11
5.3 Bodily personal injury hazards .....	11
5.4 Suffocation hazards .....	11
5.5 Strangulation hazards .....	11
5.6 Fire hazards.....	12
5.7 Thermal hazards .....	12
5.8 Drowning hazards .....	12
5.9 Chemical hazards .....	12
5.10 Electric shock hazards .....	12
5.11 Radiation hazards.....	13
5.12 Hazards from noise (sound pressure).....	13
5.13 Biological hazards.....	13
5.14 Explosion and fire flash hazards .....	13
5.15 Exertion hazards.....	13
6 Adequacy of safeguards .....	14
6.1 General.....	14
6.2 Product safeguards.....	14
6.3 Installation safeguards .....	14
6.4 Personal safeguards .....	14
6.5 Behavioural safeguards .....	15
6.6 Instructional safeguards.....	15
Bibliography.....	16

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC SRD 63408 has been prepared by IEC SyC AAL: Systems Committee on Active Assisted Living. It is a Systems Reference Deliverable.

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).

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

**IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

IECNORM.COM : Click to view the full PDF of IEC SRD 63408:2024

## 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.

IECNORM.COM : Click to view the full PDF of IEC SRD 63408:2024

# 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.

- c) Social limitations can vary greatly for an AAL care recipient as difficulty with one or more of the basic social functions:
- communication;
  - participation;
  - social status;
  - environment.

To adequately determine the appropriate standard requirements, it is also necessary to understand AAL levels of care:

- i) Independent (level 0) – AAL care recipients are not dependent on assistive technology. AAL services are used for comfort, wellbeing, wellness, fitness, entertainment, social interaction (socialization) or security.
- ii) Some assistance (level 1) – AAL care recipients need some assistance by assistive technology. This includes some assistance at some points in time or some assistance that is continuously needed.
- iii) IADL assistance (level 2) – AAL user need assistance with instrumental activities of daily living. These activities are not essential for fundamental functioning but allow an individual to live independently in a community/home. They include but are not limited to housework, preparing meals, taking medications as prescribed, managing money, shopping for groceries or clothing, use of telephone or other form of communication, transportation within the community.
- iv) ADL assistance (level 3) – AAL user need assistance with basic self-care tasks that include but are not limited to functional mobility, bathing and showering, dressing, self-feeding, personal hygiene and grooming.

IEC TS 63134 can be referenced for additional use cases, for additional details. It is important to note that the AAL care recipients' care level can change during their lifetime.

## 4.2 Risk assessment

### 4.2.1 General

Risk assessment can be considered as a systematic process of evaluating the potential risks that can be involved in a projected activity or undertaking.

Risk assessment is essential in any injury prevention strategy. It is critical to identify all events or event chains that could result in harm for each hazard.

A general approach is outlined in ISO/IEC Guide 51, which defines the risk associated with a particularly hazardous situation as a function of the severity of harm resulting from the hazard and the probability. In particular, the severity of harm and the likelihood of an event should be objectively determined and based on relevant facts that demonstrate causation instead of arbitrary and intuitive decision-making.

Different published international standards provide guidelines to address risk management, e.g., ISO 14971:2019 or ISO 31010. These standards should be used to develop and implement an internal system for Risk Assessment.

Through risk assessment, the AAL service provider should identify as many potential hazards as possible associated with the AAL service / AAL product and ensure these identified hazards have been investigated and evaluated based on their probability of occurrence and the severity of the possible harm to the AAL care recipient.

When addressing adult AAL care recipient safety, the following factors need special attention related to the risks for adult AAL care recipients:

- d) their interaction with products;

- e) their cognitive ability;
- f) their physical limitations;
- g) degree of supervision by the *AAL care assistant*;
- h) social, economic, and environmental factors.

#### 4.2.2 Preventing and reducing harm

Harm can result from hazards such as deprivation of vital needs (e.g. oxygen), transfer of energy, or exposure to chemical or biological agents (chemical or biological) greater than the body's ability to withstand. Also, other factors can have an impact to the hazards related to the AAL product / service. These hazardous situations can also include the use of the AAL product/service itself and might not only relate to the product itself. These should be identified and evaluated before.

Designing safe products generally result in primary prevention. Caution is needed as the absence of reported harm does not necessarily mean that there is no hazard.

The reader of this document should be aware of the options for risk control measures. These could be:

- a) inherently safe design and manufacture;
- b) protective measures in the AAL product / service itself or in the manufacturing process;
- c) information for safety and, where appropriate, training to users.

The order listed above could be seen as the order of priority for selecting the appropriate risk control measure

Strategy for prevention can include one or more of the following:

- recipient ability to cognitively understand use or function of;
- eliminating the hazard;
- eliminating the exposure to the hazard;
- reducing the probability of exposure to the hazard;
- reducing the severity of harm.

#### 4.2.3 Risk control measures

Taking the assessed risks into consideration, the AAL service provider should mitigate the identified risks for each hazardous situation and should implement appropriate risk control measures to minimize the identified risks to ensure a safe operation of the AAL product/service.

## 5 Hazards related to adult AAL care recipient

### 5.1 General

The most common injuries to older adults, in general, are a result of falls. Additional common injuries include struck by or against an object, cutting or piercing of the body, poisoning and other unspecified injuries.

With these in mind, hazards of particular concern for adult AAL care recipients are listed below and should be considered when developing technology, services and standards for this user group.

## 5.2 Fall hazards

Fall hazards can arise from a variety of sources and can be a result of a sequence of events. The stability of an adult AAL care recipient can be impacted by different aspects and products that are available in their daily lives.

Stability considerations for AAL products, systems or services can include the following:

- product – supporting surface, furniture, hoist/lifts, carrying handles, ease of opening;
- environment – material of surfaces, levels/transitions between areas, ease of access to buildings, areas, or AAL system, wiring and its routing;
- structural integrity (mechanical strength) – railings, grab bars, suspended masses;
- personal agility – ability to move smoothly and easily.

## 5.3 Bodily personal injury hazards

AAL care recipients can be more susceptible to bodily injury based on their age, abilities, medical condition, medications and inability to move smoothly and easily. Considerations to the following should be taken to avoid/reduce bodily injury:

- a) protrusions and projections;
- b) projectiles and moving/rotating objects;
- c) sharp edges and points;
- d) gaps and openings;

NOTE Sizes of gaps and/or openings are unintentionally changed when equipment (such as a nursing bed) is adjusted.

- e) surface of the materials that touch the skin of the AAL recipients.

## 5.4 Suffocation hazards

AAL care recipients can be at greater risk of suffocation based on their age, abilities, medical condition and medication. The following should be taken into consideration to avoid or reduce suffocation hazards:

- a) flexible materials;
- b) ingestion of objects;
- c) small objects and suction hazards.

## 5.5 Strangulation hazards

AAL care recipients can be at greater risk of strangulation based on their age, abilities, medical condition and medication. The following should be taken into consideration to avoid strangulation:

- a) wiring and its routing;
- b) bedding;
- c) draperies/blinds and their cordage;
- d) body worn devices;
- e) exercise equipment and its materials.

## 5.6 Fire hazards

AAL care recipients can be more susceptible to face fire hazards based on their age, abilities, medical condition and medication. AAL care recipients' decreased mobility can also lead to inability to easily and quickly react to a fire leading to more severe injury. The following should be taken into consideration to avoid burns:

- a) open flames;
- b) flammability and burning characteristics;
- c) malfunction of electrical equipment;
- d) flammable substances (e.g., oxygen, gases) used with equipment;
- e) placement of equipment and needed ventilation for the equipment.

## 5.7 Thermal hazards

AAL care recipients can be more susceptible to face thermal hazards based on their age, abilities, medical condition and medication. Age and medications can reduce the individual's ability to sense temperature changes leading to thermal injury. The following should be taken into consideration to avoid thermal injury:

- a) hazards from hot and cold surfaces – could be related to cognitive abilities for products that generate heat;
- b) hazards from hot or cold fluids;
- c) hyperthermia and hypothermia hazards.

## 5.8 Drowning hazards

AAL care recipients can be more susceptible to drowning based on their age, abilities, medical condition and medication. The following should be taken into consideration to avoid drowning:

- a) bathtub/shower/hot tubs – consideration for nonslip surfaces, items, barrier free entry;
- b) appropriate supports in place in case of emergency.
- c) control of temperatures of the room and the water;

## 5.9 Chemical hazards

AAL care recipients can be more at risk of chemical hazards based on their age, abilities, medical condition and medication. The following should be taken into consideration to avoid chemical injury:

- a) poisoning – ingestion of spoiled food, overdoes of medicine, failure to take necessary medicines, inappropriate combination of medication/supplements;
- b) chemical burns (battery);
- c) fumes – inability to smell leading to inhalation of caustic materials.

## 5.10 Electric shock hazards

AAL care recipients can be more susceptible to electrical shock based on their age, abilities, medical condition and medication. The following should be taken into consideration to avoid electrical shock:

- a) cord retention;
- b) overload of circuits;
- c) placement of appliance in relations to water, heat and electrical sources;
- d) protective coverage or ground wiring.

### 5.11 Radiation hazards

AAL care recipients can be more susceptible to radiation based on their age, abilities, medical condition and medication. Coexistence of multiple frequencies in the AAL environment can result in hazard arising from electromagnetic phenomena. The following should be taken into consideration to avoid radiation injury:

- a) ultraviolet radiation;
- b) high intensity, concentrated or flickering light;
- c) electromagnetic radiation consideration of how equipment impacts each other (coexistence);
- d) infrared radiation;
- e) blue light;
- f) RF exposure from smart devices.

NOTE Light intensity, exposure to EMC based on medical implants/device, UV exposure concerns.

### 5.12 Hazards from noise (sound pressure)

The following should be taken into consideration to avoid noise-related injury:

- a) lack of being able to hear;
- b) sound frequency (note: Ageing tends to cause difficulty in hearing high frequency sounds);
- c) not relied upon solely for the indication (can require another indicator such as visual).

### 5.13 Biological hazards

The following should be taken into consideration:

- a) infection;
- b) cross contamination;
- c) toxicity.

### 5.14 Explosion and fire flash hazards

The following should be taken into consideration to avoid injury from explosion and fire flash:

- a) startle reaction.

### 5.15 Exertion hazards

Physical and mental exertion:

- difficult in completing task, following complex instruction;
- difficulty in using and accessing digital tools and instructions;
- physical exertion to open doors, container, lifting of product, prescription drug bottles and medical consumables;
- robust use – mobility, ingress protection (IPXX), wear and abuse;
- products intended to be used in home and vehicles/aircraft
- shock/vibration/robust enclosure

## 6 Adequacy of safeguards

### 6.1 General

Typically, a safeguard can be applied to the product, the local installation, or a person or can be a learned or directed behaviour (example: resulting from an instructional safeguard) intended to reduce the likelihood of harm to the adult AAL care recipient.

Thus, a safeguard encompasses more than simply a protective device and can involve one or more strategies and behaviours. Then it is crucial to recognize that the adult AAL care recipient can have diminishing cognitive abilities in the AAL environment. Generally, the order of preference for providing safeguards is:

- product safeguards – scope of this document;
- installation safeguards – the responsibility of the AAL service organization;
- personal, and behavioural and social- limited based on level of care;
- instructional safeguards – limited based on level of care.

This can also depend on levels of care, and it is necessary to consider how the above safeguards can be modified based on care level and its changes.

### 6.2 Product safeguards

A product safeguard is a safeguard that is a physical part of the product. As they do not require any specific action or knowledge from the user, they are the preferred methods to prevent injuries from happening. This is especially true for products used by adult AAL care recipients as personal and instructional safeguards can be less effective based on cognitive and physical abilities can be of concern.

AAL care providers should ensure, that the AAL device complies with the relevant product standard under consideration.

NOTE AAL care provider can also be called caregivers or carers.

Examples of AAL devices are computers (IEC 62368-1) medical electrical equipment (IEC 60601 series of standards). Examples from IEC TS 63134 include Use Case 3 – Enabled Social Interaction with caregivers.

### 6.3 Installation safeguards

An installation safeguard is a physical part of the artificial environment. Installation safeguards are usually not controlled by the product manufacturer, although in some cases, installation safeguards can be specified in the installation instructions.

It should be assured, that the installation in the care environment complies with the local electrical code. This is needed to ensure a reliable connection of the AAL product to the local supply grid.

Examples from IEC TS 63134 include Use Case 7 – Intelligent Apartment and Use Case 9 Behaviour Monitoring.

### 6.4 Personal safeguards

A personal safeguard is often a physical device worn on the body.

Sometimes protective devices create problems by being not used under the intended conditions of use.