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SYSTEMS REFERENCE DELIVERABLE

Ethical considerations of artificial intelligence (AI) when applied in the active assisted living (AAL) context



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ETHICAL CONSIDERATIONS OF ARTIFICIAL INTELLIGENCE (AI) WHEN APPLIED IN THE ACTIVE ASSISTED LIVING (AAL) CONTEXT

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Draft	Report on voting
SyCAAL/301/DTS	SyCAAL/319/RVDTS

Full information on the voting for the approval of its 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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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- withdrawn, or
- revised.

INTRODUCTION

This document deals with the ethical implications and moral questions that arise from the development and implementation of artificial intelligence (AI) technologies applied in the active assisted living (AAL) context.

The population in all countries is increasingly ageing. Reducing the burden of long-term care for older persons is a major policy issue in every country. Active assisted living (AAL) systems help older persons with daily living activities so that they can live independently as long as possible. AAL can be a solution to this demographic issue.

AAL may use AI technologies to understand the condition of an AAL care recipient and their environment and provide appropriate services at appropriate times. AI-enabled systems must be aware of the decline of the AAL care recipient's physical/cognitive/judgment abilities as they age, and these systems must act appropriately. For instance, AI can determine a life-threatening risk to the AAL care recipient and a privacy concern regarding obtaining and using personal information.

The three issues around AI in general are as follows: concerns about the algorithms and particularly those that have been created by machine learning technology without human intervention; the extent to which these algorithms result in misidentification and misinformation; and the misuse of personal data leading to consequences and harm to individuals.

It is, therefore, necessary to develop general guidelines for the use of AI applied in the AAL context. This document deals with the ethical implications and moral questions that arise from the development and implementation of AI in AAL.

ETHICAL CONSIDERATIONS OF ARTIFICIAL INTELLIGENCE (AI) WHEN APPLIED IN THE ACTIVE ASSISTED LIVING (AAL) CONTEXT

1 Scope

This document describes ethical considerations that are relevant when developing AAL systems and AAL services.

This document covers AAL-specific issues related to AI that supplement those ethical considerations already addressed in other AI documents. Examples include the WHO and OECD principles of AI and those of the High-Level Expert Group on Artificial Intelligence set up by the European Commission.

This document analyses whether these frameworks for the governance of AI are sufficient to meet the requirements of the AAL environment and in particular to meet the needs of AAL care recipients.

The objective of the ethical assessment is to create concrete and clear ethical guidelines that can be used as checklists in AAL service and system platform design, development and implementation.

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 TS 63134:2020, *Active assisted living (AAL) use cases*
IEC TS 63134:2020/AMD1:2022

IEC 63240-1, *Active assisted living (AAL) reference architecture and architecture model – Part 1: Reference architecture*

IEC 63240-2, *Active assisted living (AAL) reference architecture and architecture model – Part 2: Architecture model*

3 Terms, definitions and abbreviated terms

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:

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

3.1 Terms and definitions

3.1.1
ethics
moral principles that govern an actor's (person or technical system) behaviour or their conduct of an activity

3.1.2
artificial intelligence
AI
branch of computer science devoted to developing data processing systems that perform functions normally associated with human intelligence, such as reasoning and learning

[SOURCE: IEC 60050-171:2019, 171-09-16, modified – The domain "<discipline>" has been omitted.]

3.1.3
AAL service
active assisted living service
action or function of an AAL system creating an added value for customers

EXAMPLE 1 Configuration and maintenance of AAL systems.

EXAMPLE 2 Assistant systems to support the home environment.

[SOURCE: IEC 60050-871:2018, 871-01-04, modified – The note to entry has been deleted.]

3.1.4
AAL user
active assisted living user
person who uses or benefits from, or uses and benefits from, AAL devices, systems or services

[SOURCE: IEC 60050-871:2018, 871-02-05]

3.1.5
AAL care recipient
person who receives and consumes AAL care services

3.2 Abbreviated terms

The abbreviated terms are given in Table 1.

Table 1 – Abbreviated terms

Abbreviated term	Full term
EU	European Union
IEEE	Institute of Electrical and Electronics Engineers
OECD	Organization for Economic Cooperation and Development
WHO	World Health Organization

4 Ethical considerations relevant to the AAL context

Many national organizations and international consortia have investigated and published proposed sets of requirements or criteria (for example the EU paper on Trustworthy AI [1][1], IEEE paper on Ethically Aligned Design [2], OECD Principles [3], WHO Guidance [4] and ISO/IEC TR 24368 [5]) for the creation of AI enabled and autonomous systems encompassing capabilities such as natural language processing, machine vision, machine learning, artificial neural networks, and their related algorithm development.

[1] Numbers in square brackets refer to the Bibliography.