

# INTERNATIONAL STANDARD



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

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IEC 63240-1

Edition 2.0 2024-11

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 11.020.99; 11.180

ISBN 978-2-8322-9900-5

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

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms, definitions and abbreviated terms .....	7
3.1 Terms and definitions.....	7
3.2 Abbreviated terms.....	12
4 General .....	12
5 Relationship between IoT and AAL .....	12
6 AAL reference architecture .....	13
6.1 Purpose of AAL reference architecture.....	13
6.2 Users of AAL reference architecture .....	13
6.3 Description of AAL reference architecture .....	14
6.3.1 Description of conceptual AAL reference architecture.....	14
6.3.2 Cloud and edge computing .....	15
6.3.3 Body area network (BAN) .....	19
7 Security requirements in the context of AAL .....	20
7.1 General.....	20
7.2 Privacy requirements .....	21
7.3 Security requirements .....	21
7.4 Areas relating to AAL security for consideration .....	21
7.5 Use of AI for cyberthreats .....	21
7.6 AAL privacy risk examples .....	22
7.6.1 Monitoring location .....	22
7.6.2 Monitoring health and well-being .....	22
7.6.3 IoT.....	22
7.6.4 Frame risks for the AAL system .....	22
Annex A (informative) Examples referring to the conceptual level of AAL reference architecture.....	23
A.1 Personal health check with wearable sensors (Use case 1: IEC TS 63134:2020 and IEC TS 63134:2020/AMD1:2022) and with smartphone support .....	23
A.2 Personal trainer (Use case 8: IEC TS 63134:2020 and IEC TS 63134:2020/AMD1:2022) without smartphone support .....	23
Bibliography.....	24
Figure 1 – Conceptual AAL reference architecture .....	14
Figure 2 – Cloud and edge computing (conceptual) .....	15
Figure 3 – AAL reference architecture: Home computing.....	16
Figure 4 – AAL reference architecture: Cloud computing.....	16
Figure 5 – AAL reference architecture: Edge computing.....	17
Figure 6 – Cross-domain solution.....	18
Figure 7 – Scalability and potential for savings .....	18
Figure 8 – Example of a BAN system (cloud computing at home).....	19
Figure 9 – Example of a BAN system (cloud computing outside the home environment, e.g., in the neighbourhood).....	20

Figure 10 – Security process within the context of AAL standards.....21

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ACTIVE ASSISTED LIVING (AAL) REFERENCE ARCHITECTURE AND ARCHITECTURE MODEL –

### Part 1: Reference architecture

#### FOREWORD

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IEC 63240-1 has been prepared by IEC systems committee AAL: Active Assisted Living. It is an International Standard.

This second edition cancels and replaces the first edition published in 2020. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) clarifying the Introduction;
- b) new terms and definitions have been added in 3.1;
- c) adaption of terms according to the IEC in the whole document;

- d) reference to ethical considerations of AI when applied in the AAL context has been added in Clause 5;
- e) clarifying the description of AAL reference architecture in 6.3.1;
- f) process to identify the needs on BAN, edge and cloud computing in the architecture perspective has been added in 6.3.2 and 6.3.3;
- g) new figures have been added in 6.3.2 and 6.3.3;
- h) reference to standards inventory has been added in 7.1;
- i) clarification of 7.5;
- j) Annex A has been added;
- k) updated bibliography.

The text of this International Standard is based on the following documents:

Draft	Report on voting
SyCAAL/322/CDV	SyCAAL/362A/RVC

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 International Standard 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).

A list of all parts in the IEC 63240 series, published under the general title *Active assisted living reference architecture and architecture model*, can be found on the IEC website.

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.

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## INTRODUCTION

IEC Systems Committee for Active Assisted Living (SyC AAL) is developing an architecture model and a reference architecture for AAL to guide the development and deployment of AAL services and technologies. IEC 63240 consists of the following parts, under the general title Active assisted living (AAL) reference architecture and architecture model:

- Part 1: Reference architecture;
- Part 2: Architecture model.

This document provides information to ensure usability and accessibility from the earliest stages of design and provides guidance to developers on how to incorporate these requirements. Additional requirements such as security, privacy, and trustworthiness are introduced and considered.

The first edition of IEC 63240-1 was published in 2020. Since the publication of IEC 63240-1:2020, IEC SyC AAL has been collecting issues from a variety of sources including comments from IEC National Committees. At the September 2021 online meeting of IEC SyC AAL, it was decided to set up a process to identify the needs of body area network (BAN), edge and cloud computing in the architecture perspective. These items are considered in this document.

The target audience for this document includes the following stakeholders who have an interest in the AAL system:

- AAL users and service provider personnel who can learn about AAL user needs and how to operate AAL systems;
- consumer electronics and information and communication technology device manufacturers who want to understand AAL device interface and interoperability requirements;
- stakeholders who are interested in the usability, accessibility and performance of the AAL system as well as AAL operators who need to understand the system requirements;
- regulators who are responsible for developing and supervising AAL systems and the related regulations.



# ACTIVE ASSISTED LIVING (AAL) REFERENCE ARCHITECTURE AND ARCHITECTURE MODEL –

## Part 1: Reference architecture

### 1 Scope

This document specifies the AAL reference architecture.

This document defines concepts and introduces terminology. It provides generic rules for designers of AAL systems and services with the aim to facilitate systems design and enable interoperability between components.

This document identifies safety, security, privacy, and other requirements for AAL systems such as usability, accessibility, and trustworthiness (reliability, resilience) and sets up a process to identify the needs on the body area network (BAN), edge and cloud computing in the architecture perspective.

### 2 Normative references

There are no normative references in this document.

### 3 Terms, definitions and abbreviated terms

#### 3.1 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:

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

##### 3.1.1

##### **AAL device**

device (IEV 151-11-20) used in an AAL system

EXAMPLE Examples are sensors and actuators that contain one or more components (functionality).

Note 1 to entry: External conditions and events include measurements of temperature, motion, and electrical conditions.

Note 2 to entry: There are 1) medical devices (IEV 871-06-06), as defined by regulatory agencies, 2) personal health devices and sensors (IEV 871-04-29) for fitness, wellbeing, personal comfort, and personal security and 3) devices that can serve as aggregators of personal data produced by the user of the device.

[SOURCE: IEC 60050-871:2023, 871-07-01]

### 3.1.2

#### **AAL gateway**

functional unit that connects two computer networks with different network architectures and protocols used in an AAL service (IEV 871-01-04)

Note 1 to entry: The computer networks may be local area networks, wide area networks, or other types of networks.

Note 2 to entry: Examples of gateways are a LAN gateway, a mail gateway used in an AAL service.

[SOURCE: IEC 60050-732:2010, 732-01-17, modified – The term "gateway" has been replaced by "AAL gateway". In the definition and in Note 2 to entry, "used in an AAL service" has been added.]

### 3.1.3

#### **AAL platform backend system**

##### **AAL backend system**

system that houses a number of components (and functionalities) in order to collect the data from AAL gateways or AAL devices directly over a wide area network connection, and that can also implement components for the remote management of the AAL gateways or AAL devices (e.g. firmware update) and components for interfacing with AAL information systems or other- information systems

[SOURCE: IEC 60050-871:2023, 871-07-04]

### 3.1.4

#### **AAL application**

##### **AAL application and services**

program or application that interacts with the AAL users or within the network infrastructure to transmit or exchange data and information in the network

[SOURCE: IEC 61907:2009, 3.1.13, modified – The term in the source entry is "(network) service function". In the definition, "network users" has been replaced by "AAL users" and the note to entry has been omitted.]

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### 3.1.5

#### **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]

### 3.1.6

#### **AAL service**

##### **active assisted living 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: IEC 60050-871:2018, 871-01-04]