

INTERNATIONAL STANDARD



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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 11.020.99; 11.180

ISBN 978-2-8322-9080-4

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, definitions and abbreviated terms	6
3.1 Terms and definitions.....	6
3.2 Abbreviated terms.....	8
4 General	8
5 Relationship between IoT and AAL	9
6 AAL reference architecture	9
6.1 Purpose of AAL reference architecture.....	9
6.2 Users of AAL reference architecture	10
6.3 Description of AAL reference architecture	10
7 Security requirements in the context of AAL	10
7.1 General.....	10
7.2 Privacy requirements	11
7.3 Security requirements	11
7.4 Areas relating to AAL security for consideration	11
7.5 Use of AI for cyberthreats	12
7.6 AAL privacy risk examples	12
7.6.1 Monitoring location	12
7.6.2 Monitoring health and well-being	12
7.6.3 IoT.....	12
7.6.4 Frame risks for the AAL system	12
Bibliography.....	13
Figure 1 – Conceptual level of AAL reference architecture	10
Figure 2 – Security process within the context of AAL standards.....	11

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ACTIVE ASSISTED LIVING (AAL) REFERENCE ARCHITECTURE AND
ARCHITECTURE MODEL –****Part 1: Reference architecture**

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) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

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

Draft	Report on voting
SyCAAL/176/CDV	SyCAAL/190/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication 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.

INTRODUCTION

IEC 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.

This document captures the results the work of SyC AAL on architecture and interoperability. This document reflects contributions and discussions by SyC AAL experts, mirror committees and liaison members. This document also contains material gathered from reports and group output from the SyC AAL meetings in November 2015 (Tokyo), April 2016 (Wellington), October 2016 (Frankfurt), April 2017 (Beijing), September 2017 (Cleveland), December 2017 (Eindhoven), May 2018 (Tokyo), October 2018 (Seoul), June 2019 (Frankfurt) and October 2019 (Shanghai), as well as information obtained during various web meetings.

Experts from liaison organizations and the following national committees have contributed: CA, CH, CN, DE, GB, IN, JP, KR, NL, NZ, SE, US.

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 devices and 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 and 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).

2 Normative references

There are no normative references in this document.