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TECHNICAL REPORT

colour inside

Use cases related to ambient assisted living (AAL) in the field of audio, video and multimedia systems and equipment

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CONTENTS

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USE CASES RELATED TO AMBIENT ASSISTED LIVING (AAL) IN THE FIELD OF AUDIO, VIDEO AND MULTIMEDIA SYSTEMS AND EQUIPMENT

FOREWORD

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IEC TR 62907, which is a technical report, has been prepared by technical area 16: Active assisted living (AAL), accessibility and user interfaces, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
100/2263/DTR	100/2340/RVC

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

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

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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A bilingual version of this publication may be issued at a later date.

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 publication using a colour printer.

INTRODUCTION

This Technical Report (TR) captures the results of a use case input process that began with the call for contributions of AAL use cases on 2012-06-06. The current document reflects contributions and discussions by IEC TC 100 national mirror committees, user organizations and the ITU-T Focus Group on Audio Visual Media Accessibility. This Technical Report also contains material gathered from reports, AAL research projects and group output from the IEC TC 100 AAL stage 0 project team meetings in October 2012 (Berlin), June 2013 (London) and September 2013 (Shenzhen). In total, seventeen use cases were submitted.

To start the project, a survey was designed and distributed to the IEC TC 100 P-members to collect Ambient Assisted Living (AAL) use cases. The use case submissions consisted of the title of the use case, a description and the origin of the use case. Also incorporated is the relevance of the use case within the scope of IEC TC 100. These are mainly activity based AAL use cases providing a user experience perspective from those who want to operate AV and multimedia equipment or access AAL services. The use case template helped to group and categorize the use cases according to the identified user requirements and experience of usability barriers faced by users. Understanding the usability barriers made it easier to identify categories and highlight use case commonalities. Where multiple use cases fall in the same category and had overlapping items, they were consolidated into one extended use case. All selected use cases have real-world validity. Gaps were filled by adding extra use cases and future developments were also considered. Usability barriers and functional requirements were extracted from the use cases and recommendations given for future standardization items related to AAL.

There is a natural mapping from the user experience based use cases to the clustered technical use cases, where specific technical and functional requirements are expressed.

The following national committees, liaison organizations and EU research projects contributed use cases on Ambient Assisted Living:

a) IEC TC 100 P-members China, Germany, Japan, UK and U.S.;

b) the European Blind Union;

c) the ITU-T Focus Group Audio Visual Media Accessibility;

d) and the EU Research Projects GUIDE, Persona, universAAL and AALIANCE.

Technological advances have enormous potential to make the society more inclusive by providing AAL solutions. The key issues relevant for IEC TC 100 which need to be addressed include barriers to accessibility and usability, and interoperability and personalization to ensure wide adoption.

This TR extracts and applies the user needs and accessibility principles published in ISO/IEC Guide 71.

The target audience for the TR includes:

- AAL service users who can understand how their AAL needs and their usability requirements are considered by an AAL service provider.
- AAL service providers who can learn about users AAL needs, and accessibility and usability issues, and can also learn how to operate AAL systems.
- AAL application developers who can develop AAL applications according to the needs of the AAL service users.
- CE and ICT device manufacturers who want to know what are the AAL needs of the users and what barriers elderly people and people with disabilities face which are related to the accessibility of interfaces and content.
- Administrations and government authorities that have to act as AAL service users and AAL regulators.

USE CASES RELATED TO AMBIENT ASSISTED LIVING (AAL) IN THE FIELD OF AUDIO, VIDEO AND MULTIMEDIA SYSTEMS AND EQUIPMENT

1 Scope

This Technical Report comprises seventeen use cases for Ambient Assisted Living submitted to IEC between June 2012 and September 2013.

The initial objective of this Technical Report is the identification of AAL scenarios and use cases based on real-world applications and requirements. Use cases are a well-known tool for expressing requirements at a high level with real-life relevance. The use cases provide a practical context for considerations on interoperability and standards based on user experience. They make it clear where existing standards can be further used and highlight where standardisation work is needed.

The use cases are based on the identified requirements of elderly people and people with disabilities. The use case scenarios demonstrate both the usability barriers and functional requirements. In addition, the accessibility principles developed in ISO/IEC Guide 71 were applied.

A further objective of this report is to highlight potential areas for standardisation in the AAL environment to ensure ease of operation and interoperability with a focus on specific aspects relating to audio, video and multimedia equipment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC Guide 71:2001, *Guidelines for standards developers to address the needs of older persons and persons with disabilities*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
accessibility
usability of a product, system, service, environment or facility by people with the widest range of capabilities

Note 1 to entry: Although "accessibility" typically addresses users who have a disability, the concept is not limited to disability issues.

[SOURCE: ISO TS 16071:2003, 3.2]

3.1.2
ambient assisted living
product, service, environment or facility used to support those whose independence, safety, well-being and autonomy are compromised by their physical or mental health

Note 1 to entry: The definition of AAL in the German VDE-AR-E 2757-1:2013-05 is: “concepts, products and services that combine technologies and social environment with the goal of improving the quality of life for people”.

Note 2 to entry: Various discussions on the definition of AAL and accessibility are bundled in Annex A. Annex A highlights some of the thinking of identifying the boundaries and overlaps of AAL and accessibility.

Note 3 to entry: See also ISO/IEC Guide 71.

3.1.3
impairment
problem in body function or structure such as a significant temporary or permanent deviation or loss of abilities

Note 1 to entry: For example, an impairment can be due to injury, or permanent, slight or severe and can fluctuate over time. In particular, deterioration may occur due to ageing.

Note 2 to entry: Body function can be a physiological or psychological function of a body system. Body structure refers to anatomical parts of the body such as organs, limbs and their components.

[SOURCE: ISO/IEC Guide 71:2001, 3.4, modified – Text of definition converted into note and adapted.]

3.1.4
disability
umbrella term for impairments, activity limitations and participation restrictions denoting the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors)

Note 1 to entry: In this Technical Report, disability can be a restriction or development difference that results in an individual having a different set of abilities and preferences compared to the average. This can result in barriers to access and participation where systems, services and products are not designed to accommodate the different abilities and means for interaction that result from these differences. These can include physical, sensory, and cognitive or developmental disabilities.

[SOURCE: ISO 9999:2011, 2.8, modified – Note added for the purposes of this Technical Report.]

3.1.5
usability
extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use

Note 1 to entry: Usability emphasizes that a system, product or service has to be easy for someone to use, e.g. its use needs to be intuitive, efficient, and comfortable. Notably, the term “usability” is defined more narrowly than “accessibility” since it limits applicability to “specified users.”

Note 2 to entry: See also ISO/IEC Guide 71:2001 and ISO 9241-11:1998.

[SOURCE: ISO 26800:2011, 2.9, modified – Note has been changed and more reference documents have been cited.]

3.1.6
user
person who interacts with the product, service or environment

Note 1 to entry: Adapted from ISO 9241-11:1998.

[SOURCE: ISO/IEC Guide 71:2001, 3.6]

3.1.7
user accessibility need
something, in addition to task-based needs, that is identified as necessary so that a system is accessible to diverse users in diverse contexts

3.1.8
user need
prerequisite identified as necessary for a user, or a set of users, to achieve an intended outcome, implied or stated within a specific context of use

Note 1 to entry: It might not be possible to meet all user needs.

[SOURCE: ISO/IEC 25064:2013, 4.19, Examples and notes have been omitted, but a new note has been added.]

3.1.9
user interface
all components of an interactive system (software or hardware) that provide information and/or controls for the user to accomplish specific tasks with the interactive system

[SOURCE: ISO 9241-110:2006, 3.9, modified – Definition, instead of "and controls" stated "and/or controls".]

3.1.10
diverse users
individuals with differing functional needs related to their use of a system

Note 1 to entry: Functional needs can result from individuals differing in their sensory/perceptual, physical, and cognitive or intellectual characteristics and abilities. Functional needs vary over time and across contexts.

3.1.11
diverse contexts
differing physical, environmental, economic, social, and cultural conditions

3.1.12
systems
combination of one or more products, services, built environments with which the user interacts

Note 1 to entry: Such systems are frequently also referred to as solutions.

3.1.13
application
program or group of programs designed for end users

3.1.14
use case
detailed description of a single activity in a business process that identifies data inputs and outputs, performance/timing requirements, the handling of error conditions and interfaces with external applications

Note 1 to entry: Use cases generally contain self-monitoring, self-testing and self-organizing elements.

[SOURCE: See ISO/IEC 19762-1:2008, 01.05.13, modified – Note has been added.]

3.1.15
ambient assisted living use case
description of a hypothetically possible situation or series of events where AAL concepts, products and services may improve the quality of life

Note 1 to entry: The aim is to pictorially describe a field of problems in a way that the artificial situation makes AAL approaches to solutions evident in their temporal, spatial as well as technical dimension.

3.1.16
audio description
additional audible narrative, interleaved with the dialogue which describes the significant aspects of the visual content of audio-visual media that cannot be understood from the main soundtrack alone

Note 1 to entry: Audio description is sometimes called video description in the U.S.A. This Technical Report uses the term audio description throughout.

3.1.17
subtitle
textual presentation of the dialogue (and frequently additional auditory information), typically shown at the bottom of the screen

Note 1 to entry: Subtitles can be a textual rendering in the same language as the spoken dialogue, or can provide a written translation in a different language. In some parts of the world subtitles are called "(closed) captions", and subtitling is referred to as "(closed) captioning". This Technical Report uses the term subtitles throughout.

3.1.18
audio subtitle
textual presentation of the dialogue, typically for subtitle-translated programmes, read out aloud in a spoken voice for viewers with vision or reading disabilities

Note 1 to entry: In some countries it is called bilingual broadcasting or spoken subtitle.

3.1.19
hybrid EPG
EPG that shows both past content as well as content available now and in future

Note 1 to entry: For UK equipment, this functionality is covered in D-Book 7.

3.1.20
service
operation or function that an object or user performs upon request from another object or user

Note 1 to entry: The “objects” addressed by this definition usually are technical function blocks.

[SOURCE: IEC 62026-3:2008, 3.1.44, modified – Definition, "or user" added at the end and a note added.]

3.1.21
service
intangible product that is the result of at least one activity performed at the interface between the supplier and customer

[SOURCE: ISO/IEC 19796-1:2005, 2.25].

3.1.22
AAL service
action or function of an AAL system creating an added value for customers without involving a service provider

3.1.23
AAL service
operation or function of an AAL system or connected with an AAL system

EXAMPLE 1 Configuration and maintenance of AAL systems.

EXAMPLE 2 Assistant systems to support the home and living environment.

Note 1 to entry: AAL systems can offer an alternative and convenient access to services. An AAL service may consist of several individual services.

3.1.24
AAL service user
person who interacts with an AAL system or is connected with an AAL system

3.1.25
content creator
individuals, groups of people or a company that create content in the broadest sense for consumption on a connected TV, including the service provider of the broadcast service

3.1.26
telehealthcare
form of assistance for persons or patients in which a telemonitoring system is used for telemedical examination, diagnosis and monitoring and/or for the determination of relevant health parameters by bridging the space or time distance and by forwarding the information to an evaluating party

Note 1 to entry: Telehealthcare ranges from a simple phone call between two professionals in health care services to advanced applications such as remote controlled operations using robotics.

3.1.27
telemonitoring
telemedical examination, diagnosis and monitoring of patients by their doctor in charge or by a telemedical care centre

Note 1 to entry: Telemonitoring requires that special medical, technological, logistical, data-security related and legal conditions be met.

3.1.28
telemonitoring system
remote recording of vital and environmental data (e.g. blood pressure, blood glucose, weight, ECG) in the home or mobile environment of a patient by his or her doctor in charge or by a telemedical care centre

Note 1 to entry: The objective of the system is to provide optimum care for users at all times without having to make long trips to see a doctor.

3.1.29
health service
effect of a service provision process to prevent and cure diseases and to restore the best possible individual state of health

3.1.30
vitality value
patient-related vital data measurement, measured by devices connected to the patient or collected otherwise by the patient

EXAMPLES: pulse rate, blood glucose level, blood pressure and body temperature.

Note 1 to entry: See also ISO/IEEE 11073-10201:2004.

3.1.31
patient
person whose condition requires the need for intervention of medical care personnel

3.2 Abbreviations

For the purpose of this document, the following abbreviations apply.

AAL	Ambient Assisted Living
AD	Audio Description
ALS	Amyotrophic Lateral Sclerosis

API	Application Programming Interface
app	Application
AS	Audio Subtitle
ASR	Automatic Speech Recognition
CE	Consumer Electronics
CTV	Connected Television
DECT	Digital Enhanced Cordless Telecommunications
DVD	digital video disc
ECG	Electrocardiography
e.g.	for example
EPG	Electronic Programme Guide
etc.	et cetera
EU	Europe
FCC	United States Federal Communications Commission
HCI	Human Computer Interaction
Html	Hypertext Markup Language
ICT	Information and Communication Technology
i.e.	id est, that is to say
I/O device	Input/Output device
IP	Internet Protocol
IR	Infrared
ITU	International Telecommunication Union
ITU-T	ITU Telecommunication Sector
PC	Personal Computer
RF4CE	Radio Frequency for Consumer Electronics
RFID	Radio Frequency Identification
TR	Technical Report
SAP	Secondary Audio Programme
SS	Spoken Subtitle
STB	Set top box
TabIO	Tablet and multi-touch interface
telco	telecommunications company
TTS	Text to Speech
TV	Television
UI	User Interface
UIA	User Initialization Application
UK	United Kingdom
USA	United States of America
USB	Universal Serial Bus
VHS	Visual Human Sensing