IEC TR 63447-2

Edition 1.0 2024-01

TECHNICAL
REPORT

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inside

Form factor of smart mobile devices –
Part 2: Use cases of multimedia services

IEC TR 63447-2:2024-01(en)

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FORM FACTOR OF SMART MOBILE DEVICES –

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IEC TR 63447-2 has been prepared by Technical Area 1: Terminal for audio, video and data services and content, of IEC technical committee 100: Audio, video and multimedia systems and equipment. It is a Technical Report.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
100/4070/DTR	100/4102/RVDTR

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 Technical Report 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.

A list of all parts in the IEC 63447 series, published under the general title *Form factor of smart mobile device*, 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 in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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INTRODUCTION

In IEC TR 63447-1, various form factors of SMDs are described. As SMDs have different shapes, SMDs have their own use cases which are applied for the intuitive use of multimedia services.

In other words, there is the same basic use case framework for a multimedia application, but it is essential to set different screen configurations and audio interactions for the optimized use cases, depending on the SMD form factors.

This Technical Report introduces various use cases of multimedia services that depend on three representative form factors (flat, folded, and swivel type) released so far.

FORM FACTOR OF SMART MOBILE DEVICES –

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1 Scope

This document introduces use cases of multimedia services depending on form factors of smart mobile devices. It also includes use cases of multimedia applications with user interactions.

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
folded posture
condition where the screen or two screens are folded

3.1.2
swivel posture
condition where one of the displays can turn or spin while the other display does not move

3.1.3
context menu
menu in a graphical user interface

3.2 Abbreviated terms

OTT   over-the-top

SMD   smart mobile device

4 Overview

SMD form factors described in IEC TR 63447-1[1][1] have their own use cases which are applied for the intuitive use of multimedia services. The differentiating factors that characterize between SMDs and traditional personal computing (for example, desktop computers) are their ubiquitous use, usually small size, and mixed interaction modalities for multimedia services. The SMD can be deemed to be a computer that has become small enough to enable mobile usage.

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

SMDs contain numerous multimedia applications that use cameras, speakers, microphones, a touchscreen, and a light sensor, enabling them to acquire information and interact with users. The form of an SMD can be altered with various components and the features of these components can impact the use cases. Some interaction components of different research fields are shown in Figure 1 [2].
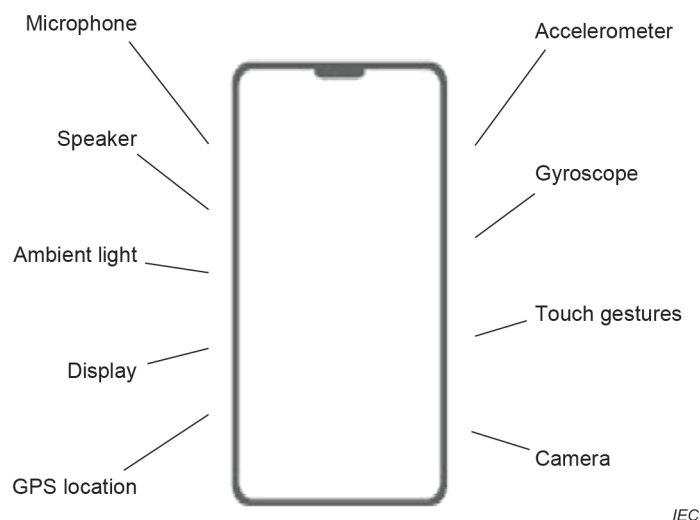

Microphone · Speaker · Ambient light · Display · GPS location · Accelerometer · Gyroscope · Touch gestures · Camera

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Figure 1 – Interaction components for multimedia services

5 Multimedia services depending on form factors

5.1 Multimedia services on flat type SMD

5.1.1 Use cases of audio applications

When using the audio part, in some cases, the user switches the SMD to silent so as not to be disturbed by unexpected sounds such as ringtone and incoming message tone. In this situation, they also mute unnecessary sounds such as sound effects, game soundtracks, and other audible feedback. When the SMD is in silent mode, audio explicitly initiated by the user, such as media playback, alarms, and audio/video messaging, could be played.

Depending on the selected audio category, the sound of the application can be mixed with other audio, played while the application is in the background, or stopped when the user sets the ringtone/mute switch to silent. As much as possible, a category that helps the application meet the user's expectations would be selected. For example, if possible, the user would be allowed to listen to music from other applications without interruption.

In some cases, the audio of another application can stop audio from being played in the application. Interruption can or cannot be resumed, such as when the user gets a call and the user starts a new music playlist. The user can resume playing audio by ignoring the type of request or pause playing audio by accepting the request. For example, a media playback application that actively plays audio when an interruption occurs could check whether the type could resume before continuing playback when the interruption ends. On the other hand, applications such as games do not need to check the type of interruption before automatically resuming playback.

If the application can temporarily suspend audio from another application, the user could flag the audio session so that the device can know when the other application could restart.

If the application actively plays audio in a clear audio-related context or is connected to a wireless device, it is recommended to respond to an audio control. Otherwise, when users activate controls, the application could not interrupt the audio of other applications that are

currently playing. Table 1 summarizes the audio action items to cover several multimedia interactions.

Table 1 – Use case items of audio action

Category	Meaning	Action
Solo ambient	Sound is not essential, but other audio is silent.	It could respond to the silence function. It cannot mix with other sounds. It does not play in the background.
Ambient	Sound is not essential, and it does not silence other audio.	It could respond to the silence function. It can mix with other sounds. It does not play in the background.
Playback	Sound is essential and might mix with other audio. For example, an audio book or educational application that teaches foreign languages which the user might want to listen to after shutting down the application.	It could respond to the silence function. It can or cannot mix with other sounds. It can be played in the background.
Record	The sound is recorded. For example, there is a memo application that provides an audio recording mode.	It does not respond to the silence function. It cannot mix with other sounds. It can be recorded in the background.
Play and record	Sound can be recorded and played simultaneously. For example, it is a voice message or video call application.	It does not respond to the silence function. It can or cannot mix with other sounds. It can be recorded and played in the background.

5.1.2 Use cases of applications with finger touch interaction

The SMD is configured with minimum physical key buttons and interacts with the user through the touch screen display. These touches allow for easy access to applications and operation of objects within the application on the screen.

In general, it is familiar and does not force them to interact in different forms to do the same thing. In the case of 3D touch, one of the touch functions, various levels of pressure can be applied to the touch screen to access additional functions. For example, a context menu can be used to access additional functions related to items without complicating the application interface. To display the 'contextual menu', the user can use a touch method defined in the system, a hold gesture, or a 3D touch. When the screen is opened, the menu suitable for the situation displays a preview of the item and lists commands that operate for the item. At this time, a visual group can be created to help the user scan the menu more easily. If the user touches the application icon for a long time on the home screen, the available quick action menu is noticed. Through the application's 'contextual menu', the user can quickly perform general app-specific tasks and view various information. For example, Figure 2 shows a calendar provides a 'shortcut' to create a new schedule item in addition to displaying the following schedule.