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TECHNICAL REPORT

colour inside

Electronic displays for special applications – Part 1: General introduction

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ELECTRONIC DISPLAYS FOR SPECIAL APPLICATIONS –

Part 1: General introduction

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

Draft	Report on voting
110/1709/DTR	110/1728/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 63340 series, published under the general title *Electronic displays for special applications*, 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- withdrawn, or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

This document intends to gather related information for future standardizations of various display applications, and to clarify the relationship to normative aspects of the standardization in these application fields. Because a Technical Report (TR) is entirely informative, this document does not intend to formulate strong strategies. This document provides possibilities and candidates of strategies to extract application fields for standardization. The relation and difference between application-based standardization and technology-based standardization are discussed in Clause 4. In the application-based standardization, how to adopt something to others is analyzed with clarifying "context of use" and "an optimum degree". Therefore, requirements, required threshold values, or specifications are important. In addition, by technology developments these requirements become advanced more, and Clause 5 explains how to update these requirements in standards. There are some applications for which technical committees (TCs) have already been established, and the collaboration modes with related TCs are explained in Clause 6. In Clause 7, five application candidates have been extracted using inventory tables, and the key criteria is the public and societal natures. Clause 8 explains possible strategies and schemes for application-based standardization. The necessities of each application standardization are described in other TRs.

ELECTRONIC DISPLAYS FOR SPECIAL APPLICATIONS –

Part 1: General introduction

1 Scope

This part of IEC 63340, which is a Technical Report, provides related information for future standardizations of various display applications. This document includes overview of display applications, and the possible strategies to standardize these application fields.

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
standardization
activity of establishing, with regard to actual or potential problems, provisions for common and repeated use, aimed at the achievement of the optimum degree of order in a given context

Note 1 to entry: In particular, the activity consists of the processes of formulating, issuing and implementing standards.

Note 2 to entry: Important benefits of standardization are improvement of the suitability of products, processes and services for their intended purposes, prevention of barriers to trade and facilitation of technological cooperation.

[SOURCE: ISO/IEC GUIDE 2:2004, 1.1]

3.2 Abbreviated terms

HMI human–machine interfaces
JWG joint working group
PT project team
SDG Sustainable Development Goals
SDO standards development organization
TC technical committee
TR technical report
WG working group

4 Significance of application standardization

According to ISO/IEC GUIDE 2:2004 [1][1], 1.1, the term "standardization" is defined as "activity of establishing, with regard to actual or potential problems, provisions for common and repeated use, aimed at the achievement of the optimum degree of order in a given context". For this activity, it is necessary to clarify "a given context", "an optimum degree", "problems" and so on. In the field of display industry, these depend on how and where to use displays, and what to be shown on displays. It is significant to consider applications of displays.

Electronic displays have become essential components of human–machine interfaces (HMI) and consequently the production volumes of these displays have increased steadily to meet the increasing demand. Further growth is expected due to the expansion of application of displays, being pushed by smart house, smart office, connected industries, remote office, drone, security camera, and others. Automotive, gaming and e-sports applications, where the market is growing rapidly, demand a special requirement for it.

In addition, in the field of display applications, related users and industries exist, and the standardization activities need to hear their opinions. A key will be how to meet the expectations and demands of related industries, and how to contribute to them. Application standardization has an aspect of communications with related industries. Through these communications, it is essential to clarify specific points to be mainly contributed by display industry.

Regarding the contributions from display industry, because many related industries use electronic displays, the harmonization among the related industries is important. For example, if different industries adopt different test methods without any specific reasons, it will cause confusion. The specific points on how to contribute to their harmonization are described in Annex A.

In some specific application industries, such as medical equipment, if these industries need to standardize some requirements or threshold values in the relevant application TCs, the related TC of display industry would contribute to them. For example, the appropriateness of the threshold values can be commented on, and appropriate test methods to obtain the test results can be suggested.

NOTE 1 An example would be a standardization of medical image display systems in IEC/TC 62/SC 62B. Evaluation methods, acceptance and constancy tests, and performance criteria for diagnostic imaging equipment in medical practices are being standardized. This standardization aims at establishing the performance criteria for medical displays.

NOTE 2 How measurement and evaluation methods will be harmonized across different industries is described in Clause 8.

The definition of standardization (3.1) suggests an approach based on a set of rules (“context”, “degree”, “problems”) that must be adhered to. On the other hand, a technology-based approach exists. When a new technology appears, the definition and measurement methods can be standardized, as shown in Figure 1.

Generally speaking, regarding the application-based approach, the adoption of something by users is analyzed. For this analysis, clarifying "context of use" and "optimum degree" is key. This means that requirements, required threshold values, or specifications are important. Generally, specifications include blank detail specifications which can be effective for stipulating specific measurement and test conditions to each application.

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

In order to obtain values, measurement and test methods can apply, but it can be noted that between the application-based standardization and the technology-based standardization, the start line of considering measurement and test methods would be different. Therefore, it is crucial that these are harmonized in the function-based standardization. In addition, in many cases, thanks to the technology developments, application demands and requirements become more advanced, which means that these are not static, but dynamic based on applications and technologies. How to update the requirements in standards is explained in Clause 5.

Regarding measurement and test methods, in the technology-based standardization, many possibilities or variations of methods can be considered and therefore meaningless developments of measurement and test methods are avoided. However, in application-based standardization, measurement and test methods are based on actual or potential problems of markets. Some methods in the technology-based standardization are not necessary in some applications. It is important to gather contexts of use and demands of each application.

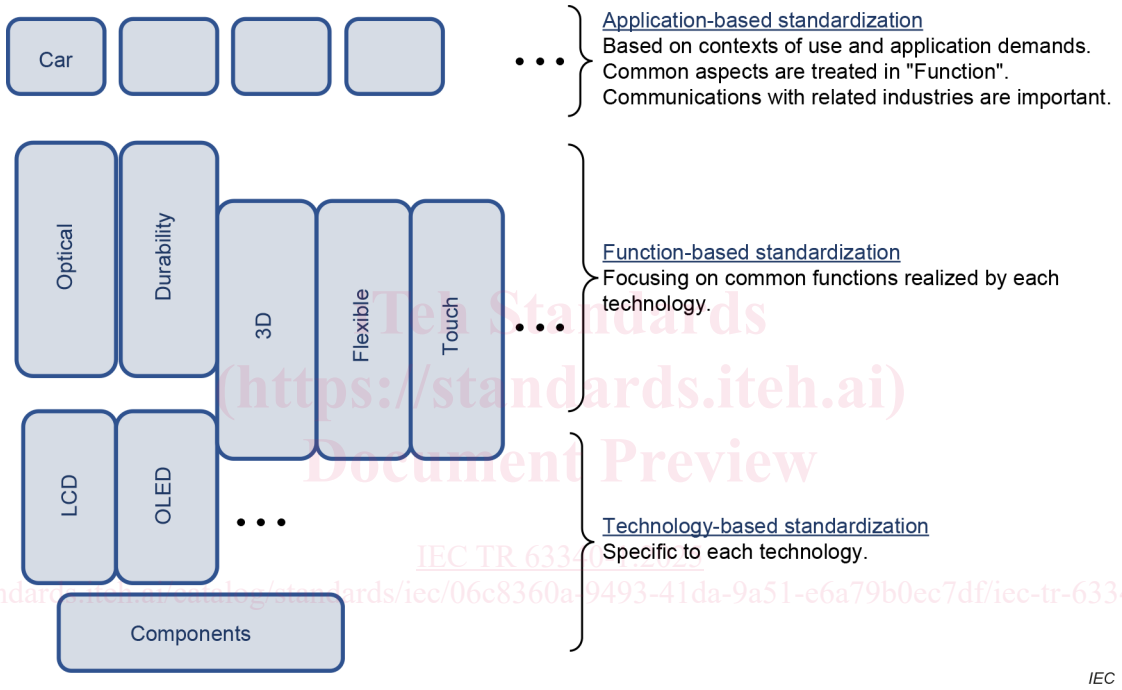

Figure 1 – Standardization approach based on technology, function and application aspects

5 Threshold value stipulation and further improvement issues

There are some concerns regarding the standardization including threshold values. If the requirements or thresholds specific to each application are stipulated, there can be some problems, for example, the thresholds can prevent further improvement.

Meaningless stipulation of requirements or thresholds can be avoided, but in application-based standardizations, they are sometimes necessary in order to keep adaptability. Generally, in such a case, the term "revision" or "version" is applied. For example, IEC 62680-2-1:2015 [2] specifies "Universal Serial Bus Specification, Revision 2.0" and IEC 62680-3-1:2017 [3] "Universal Serial Bus Specification, Revision 3.1". With technology developments, new revisions can be prepared, which serve not to prevent further technical improvements, since in the new standard revision, new requirements or thresholds will be specified.